www.vdo.com

Digital Tachograph – DTCO 1381

Operating instructions Company & Driver GB

VDO

Dear user,

The **DTCO 1381 d**igital **t**ach**o**graph, with its system components, is an EC recording device that complies with the technical specifications according to the EC regulation (EEC) no. 3821/85 annex I B, (as amended).

The prepared data helps …

- the driver obey the law when driving
- and gives the company useful data about the performance of the driver and the vehicle (special software required).

These operating instructions were written for the **company** and the **drivers** and describe proper handling of the DTCO 1381 as specified by the regulations. Carefully read these instructions and become familiar with the DTCO 1381.

Further information on the DTCO 1381 as well as contact addresses are available on the Internet at: **www.vdo.com**

We wish you happy motoring.

Your friends at Continental Automotive GmbH

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General instructions

Means of depiction

Handling the DTCO 1381

Legal requirements

Handling the tachograph cards

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1

■ Means of depiction

You will find the following emphases in these operating instructions:

Warning message

A warning message points out possible risks of injury or accidents.

Attention!
The text beside or below this symbol contains important information to avoid loss of data, to prevent damage to the device, and to comply with legal requirements.

Hint
This sign will give you some advice or information which, when not observed, could lead to malfunctions.

The book means a reference to another documentation.

Steps

1. The numbered steps describe actions – You must do something. For example you will be guided through the menu step by step and asked to make an entry.
2. Further actions are numbered consecutively.

Symbols

* The asterisk marks a special feature / option.
Note: Observe the instructions for the ADR variant and the option "Automatic adjustment of the activities after ignition on/off ", as individual functions depend on the ignition.

➥ This sign shows the page on which you will find further information about the topic.

⇨⇨ This sign indicates that the topic will be continued on the next page.

Menu representation

Flashing lines or characters in the menu display are shown in *italics* **(1)** in these operating instructions.

Definitions

Driver 1 = Crewmember who is driving the vehicle at the moment or will be driving the vehicle.

Driver 2 = Crewmember who is not driving the vehicle.

■ Handling the DTCO 1381

Risk of Accident

While driving, messages can appear in the display. It is also possible that the driver card will be automatically ejected.
Do not be distracted by this; instead, continue to focus all of your attention on driving safely.

Danger of injury

You and other persons might be injured by an open printer drawer. Open the printer drawer only for inserting a paper roll!

Depending on the volume of information printed, the thermal printing head may be very hot! Wait until the printing head has cooled down before you insert a new roll of paper.

Danger of explosion

The DTCO 1381 ADR version * is designed for use in explosion-risk environments.
Please observe the instructions for transport and handling of hazardous materials in explosion-risk environments.

Observe the following instructions in order to avoid damage to the DTCO 1381!

- Authorised persons are responsible for installing and sealing the DTCO 1381. **Do not carry out any repairs of the device or the supply lines.**
- Do not insert any other cards, such as credit cards, cards with relief printing, or metallic cards, etc. into the card slot. These type of cards will damage the card slot of the DTCO 1381!
- Only use type-approved paper rolls recommended by the manufacturer (original VDO printer paper). Make sure that it contains the approval mark.
➥ *Details refer to “Paper roll” on page 84.*
- Do not activate the button elements with sharp-edged or pointed objects such as a ballpoint pen, etc.
- Clean the unit with a slightly moist towel or with a microfibre cleaning cloth. (Available from your sales and service center.)
➥ *Refer to “Care and maintenance” on page 83.*

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■ Legal requirements

⚠ Any person who makes any changes to tachographs or the signal feed in a way that influences the recording and memory of the tachographs, especially if done with fraudulent intentions, may violate laws or provisions.

The falsification, suppression, or destruction of tachograph recordings, the tachograph cards, and the printed documents is forbidden.

Legal Foundation

The use of tachographs is now regulated in the respectively valid version of the EC regulations 3821/85 in combination with EC regulations 3820/85 and the relevant national regulations. They transfer to the driver and the holder of the vehicle (company) a number of obligations and responsibilities. The following list is not guaranteed to be complete or legally valid.

▶ Obligations of the driver

- The driver must take care that the driver card and the tachograph will be used properly.
- Behaviour in the event of malfunctions of the tachograph:
  – The driver must note information about the activities which are no longer properly recorded or printed by the tachograph on a separate sheet or on the rear side of the paper roll!
  ➥ *Refer to “Handwritten activity entries” on page 38.*
  – If away from base, for more than 1 week, the driver must ensure that the tachograph is repaired by an authorised workshop en route.
- During mixed tachograph operation (use of vehicles with analogue [chart based] and digital tachograph), the necessary documents must be carried.
  ➥ *Refer to “Driver/vehicle change during operation” on page 41.*
- If the driver card is lost, stolen, damaged, or malfunctions, then the driver must at the beginning and at the end of the journey generate a daily printout from the DTCO 1381 and add his personal information. If necessary, availabilty periods and other working times must be inserted by handwritten entries.
  ➥ *Refer to “Handwritten activity entries” on page 38.*
- If the driver card is damaged or fails to operate properly, it must be sent back to the authorised authority, or its loss must be duly notified. The replacement card must be applied for within seven calender days.
- If the driver card is lost, stolen, damaged or malfunctions, a journey may be continued without driver card for a period of 15 calendar days or longer if necessary for the vehicle to return to the company location. ⇨⇨

- Inform the authorised authority immediately about the exact reasons for the renewal, replacement, or exchange of the driver card by another member state authority.
- After the end of validity, the driver must continue to carry the driver card for at least seven calender days.

▶ Obligations of the company

- Take care that, when a new vehicle is delivered, an authorised workshop immediately completes the calibration data with authorised member state and vehicle registration number.
- Make sure that the company card is used correctly. Lock the company in the DTCO 1381 at the beginning of the vehicle deployment, and lock it out again at the end.
  ➥ *Details refer to "Company card insertion" on page 23.*
- Make sure that enough authorised rolls of paper are available in the vehicle.
- Monitor the proper function of the tachograph. Observe the intervals which, according to the legal stipulations, are prescribed for the inspection of the tachograph. (Periodic (calibration) test at least every two years.)
- Download the data from the data memory of the DTCO 1381 and from the driver cards at regular intervals and store the data according to the legal stipulations.
- Have repair and calibration work done by authorised workshops only.
  ➥ *Details refer to "Compulsory Tachograph inspections" on page 83.*
- Supervise the proper use of the tachograph by the drivers. Check driving times and rest periods periodically and compare these with the legal requirements.

▶ Handling of the printouts

- Take care that the printouts will not be damaged by strong light, sunlight, moisture, or heat (making them illegible).
- The holder of the vehicle / the company must retain the legal printouts for at least 1 year. (2 years for Working Time Directive Regulations.)

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■ Handling the tachograph cards

Possession of a tachograph card authorises the holder to use the DTCO 1381. Areas of activity and access rights are prescribed by law.
➥ *Refer to “Tachograph cards” on page 76.*

⚠ The driver card is person-specific. The driver uses this card to identify himself to the DTCO 1381.
The driver card is not transferable!

⚠ The company card is designed for owners and operators of vehicles with installed digital tachograph and must not be transferred to "Others".
The company card must not be used for driving!

☞ Handle your tachograph card carefully in order to avoid loss of data and observe the instructions of the issuing authorities for tachograph cards.

- Do not bend or fold the tachograph card and do not use them for anything other than their intended purpose.
- Do not use damaged tachograph cards.
- Keep all contact surfaces clean, dry, and free of grease and oil (always use a protective cover).
- Protect the card from direct sunlight (do not allow it to lie on the instrument panel).
- Do not place it in direct proximity to strong electromagnetic fields.
- Do not use the card beyond its period of validity. Apply for a new tachograph card in a timely manner before expiry.

► Cleaning tachograph card

Clean dirty contacts of the tachograph card with a slightly moistened cloth or with a microfibre cleaning cloth. (Available from your sales and service center.)

⚠ Do not use any solvents like thinner or petroleum spirits to clean the contacts of a tachograph card.

Introduction

First operating steps

Display and operational elements

Display variations

Special displays

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■ First operating steps

2

▶ For the company

1. Register your company within the DTCO 1381. Insert the company card into any card slot.
   ➥ *Details refer to “Company card insertion” on page 23.*

☞ The company card must not be used for driving!

2. Withdraw the company card at the end of the registration or the download of data from the card slot.
   ➥ *Details refer to “Company card withdrawal” on page 25.*

▶ For the driver

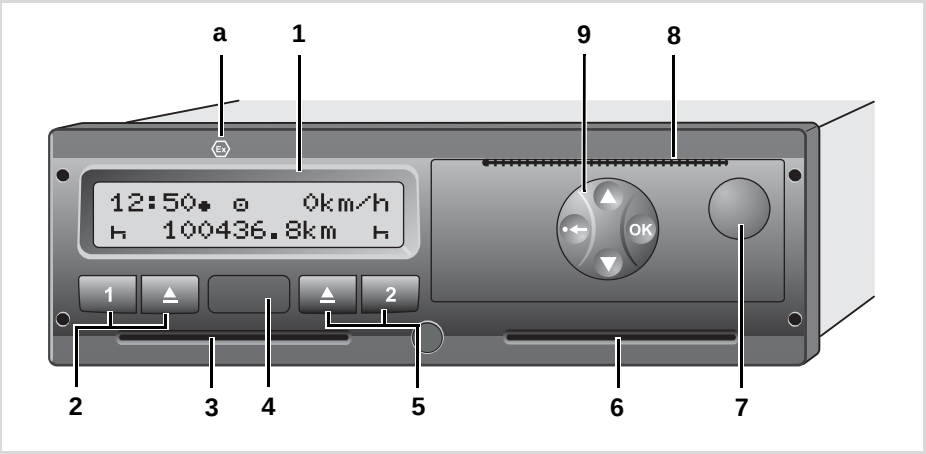
1. Insert your driver card into the card slot at the beginning of the shift (start of working day).
   ➥ *For more details, see “Inserting driver card(s)” from page 28.*
2. You can add activities using the "Manual entry".
   ➥ *For more details, see “Manual entries” from page 30.*
3. Use the activity button to adjust the activity you want to carry out at that moment.
   ➥ *Details refer to “Setting activities” on page 37.*
4. Adjust the time to the current local time.
   ➥ *Details refer to “Set Local time” on page 57.*

The DTCO 1381 is ready for operation!

5. **Important!** During a rest period or break time, always set the activity to "".
6. Possible faults in the device or the system components will appear in the display. Acknowledge the message.
   ➥ *For more details, see “A message appears” from page 62.*
7. At the end of the shift (end of the working day) or vehicle change, you request your driver card from the card slot.
   ➥ *For more details, see “Withdrawing driver card(s)” from page 39.*
8. You can display or print activities from preceding days as well as saved events, etc. by means of the menu functions.
   ➥ *For more details, see “Calling up menu functions” from page 48.*

⚠ These operating instructions do not contain the legal requirements which are valid in the respective countries. If necessary, they must be complied with, too.

■ Display and operational elements



(1) Display
(2) Driver 1 keypad
(3) Card slot 1
(4) Download interface
(5) Driver 2 keypad
(6) Card slot 2
(7) Unlock button printer drawer
(8) Cutting edge
(9) Menu buttons

(a) Symbol " Ⓔ " for ADR variant *
(ADR = European **A**greement concerning the international carriage of **d**angerous goods by **r**oad)

▶ Brief description

Display (1)

Depending on the vehicle's operational condition, different displays will appear or data can be displayed.
➥ *Refer to "Display variations" on page 17.*

Driver 1 keypad (2)

1 Activity button for driver 1
➥ *Details refer to "Setting activities" on page 37.*

⏏ Ejection button for card slot 1

Card slot 1 (3)

Driver 1, who will drive the vehicle at this moment in time, inserts his driver card into slot 1.
➥ *For more details, see "Inserting driver card(s)" from page 28.* ➪➪

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Download interface (4)

The download interface is located under the cover. This interface is enabled only if a company card, control card, or workshop card is inserted.

➥ *Details refer to “Access rights of the tachograph cards” on page 77.*

Driver 2 (5) keypad

2 Activity button for driver 2

⏏ Ejection button for card slot 2

Card slot 2 (6)

Driver 2, who is not driving the vehicle at this moment in time, inserts his driver card into slot 2 (crew operation).

Unlock button printer drawer (7)

Use this button to unlock the printer drawer, for example when inserting a roll of paper.

Cutting edge (8)

You can use the cutting edge to tear off a printout generated by the integrated printer.

Menu buttons (9)

Use the following buttons to enter, display, or print out data:

▲/▼ Use the paging function to select the desired function or selection. (This is possible by pressing and holding down the auto-repeat function key.)

OK Confirm or acknowledge desired function / selection.

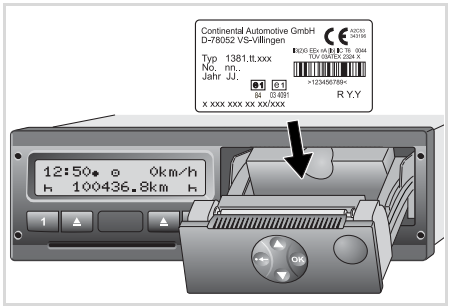
⏎ Leave menu one step at a time or cancel the entry of the country.

➥ *For more details, see “Calling up menu functions” from page 48.*

ADR variant * (a)

☞ Some functions, such as insertion or removal of the tachograph cards, printing or display of data are possible only while the ignition is switched on!

Model plate



Model plate

After opening the printer drawer, the model plate is visible with the following data: Name and address of the manufacturer, device version, serial number, year of manufacture, test and approval mark, and release version.

■ Display variations

General Information

The display consists of pictograms and text with the language being automatically set as follows:

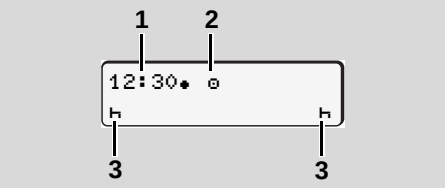
- The language will be determined by the driver card that is currently inserted in card slot 1 and / or the driver card that was most recently inserted in the DTCO 1381.
- Or the tachograph card with a higher value, such as the company card, control card.

Select language

As an alternative to the automatic language setting, you can individually set a preferred language.

➥ *Details refer to “Setting the language” on page 49.*

▶ Standby mode



Display Standby mode

In the Operational "⊙" mode, the DTCO 1381 will switch into standby mode after about 5 minutes:

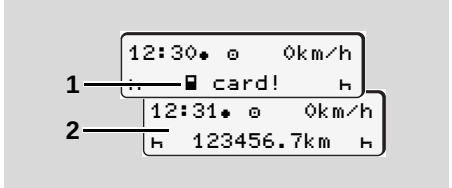
- the vehicle's ignition is off,
- and no message is pending.

The set activities **(3)** will appear in addition to the time **(1)** and operating mode **(2)**. The display disappears after another 3 minutes (customer-specific value).

Display Standby mode will be cancelled when:

- you switch on the ignition
- you press any key,
- or when the DTCO 1381 announces an event or a fault.

▶ Display after ignition on



Display after ignition on

If there is no tachograph card in card slot 1, this note **(1)** will appear for approximately 20 seconds and then the standard display **(2)** will appear.

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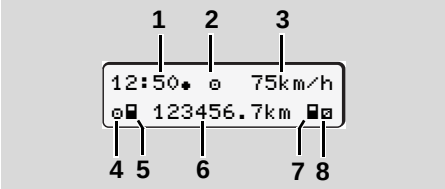
2

▶ Default display



Default display

As soon as the vehicle starts moving and no message is displayed, the standard display appears automatically.

(1) Time
with symbol "✤" = Local time
without symbol "✤" = UTC time
➥ *Refer to "Time management" on page 81.*
(2) Symbol of the operating mode "Operational"
➥ *Details refer to "Operating modes of the DTCO 1381" on page 75.*
(3) Speed
(4) Activity, driver 1
(5) Card symbol, driver 1
(6) Total odometer
(7) Card symbol, driver 2
(8) Activity, driver 2

▶ Data display during trip

Data display during trip

Press any menu key while driving and current times of the inserted driver card will appear.

(1) Times of driver 1:
Driving time "" since a break of 45 minutes and valid break "" (cumulative valid break times in break periods of at least 15 minutes followed by at least 30 minutes).
(2) Times of driver 2:
Current activity availability time "" and duration of activity.

☞ If the driver card is missing, times which are assigned to the respective card slot "1" or "2" will appear:

The standard display will appear again after any key is pressed again or after 10 seconds.

▶ Data display when the vehicle is stationary

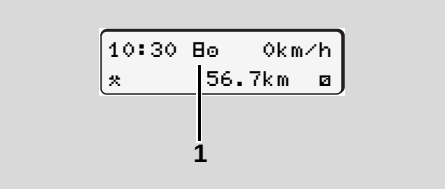
When the vehicle is not moving and driver card is inserted, you can call up other data of the driver card.
➥ *Refer to "Calling up menu functions" on page 48.*

▶ Display of messages

Regardless of which display currently appears or whether the vehicle is moving or stationary, messages will be displayed with priority.
➥ *Refer to "A message appears" on page 62.*

■ Special displays

▶ Production status

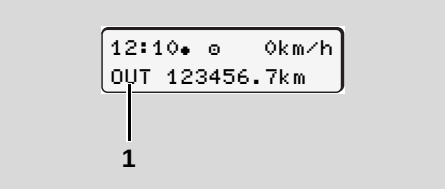


Display of production status

If the DTCO 1381 has not yet been activated as a recording device, then "Production status", symbol "" **(1)** will appear. The DTCO 1381 will not accept any tachograph cards except the workshop card.

> ⚠ **Please make sure that the DTCO 1381 is immediately and properly brought into operation by an authorised workshop.**

▶ Out of scope



Out of Scope display

The vehicle is driving outside the scope of the regulations, symbol "OUT" **(1)**.

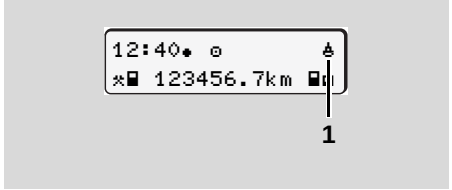
You can set this function through the menu.

➥ *Refer to "Enter Out beginning / end" on page 57.*

The following journeys may be outside of the scope of application:

- Journeys on non-public roads.
- Journeys outside of EU countries.
- Journeys where the vehicle does not require use of the DTCO 1381 in accordance with the regulations.

▶ Ferry transfer or train transfer



Display of ferry transfer or train transfer

The vehicle is located on a ferry or on a train, symbol "" **(1)**.

You can set this function through the menu.

➥ *Refer to "Enter Beginning of ferry / train" on page 57.*

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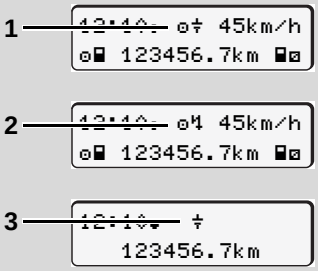
2

► Behaviour during low voltage / overvoltage



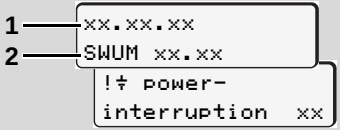
Display supply voltage

If the supply voltage of the DTCO 1381 is too low or too high, an indication is shown as follows.

Case 1: "⚙ϟ" **(1)** Low voltage or ...
Case 2: "⚙↯" **(2)** Overvoltage
The DTCO 1381 continues to save activities. The functions printing or display of data and the insertion or withdrawal of a tachograph card are not possible!

Case 3: "ϟ" **(3)**
This case corresponds to a power interruption. The DTCO 1381 cannot fulfill its role as a recording device! The driver's activities will not be recorded.

► Power interruption



Display of the "Power interruption" message

As soon as the voltage is present again, the version of the user software **(1)** and the version of the software upgrade module **(2)** will appear for approximately 5 seconds.

Then the DTCO 1381 indicates "Power interruption".

⚠ If, with correct on-board voltage, the symbol "ϟ" is displayed permanently, please contact an authorised workshop.
When the DTCO 1381 is defective, you are obligated to note activities with handwritten entries.
➥ *Refer to "Handwritten activity entries" on page 38.*

"Company" mode

Functions of the company card

Company card insertion

Prepare data download

Company card withdrawal

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■ Functions of the company card

⚠ The company takes care for the correct use of the company card(s).

Please observe the legal stipulations applicable in your country!

3

The company card identifies the company and registers it into the DTCO 1381, the first time that the card is inserted. Thus, the access rights to the data assigned to the company will be ensured.

The inserted company card authorises you:

- To lock-in and lock-out the company when using this DTCO 1381, for example on sale of the vehicle, expiry of the vehicle lease etc.
- To access data from the data memory and, especially data that has been assigned specifically to this company.
- Access to data from an inserted driver card.
- To display, print out or download data via the download interface.

☞ The company card is designed for the data management of the company only and must not be used for driving! If the company card is used for driving, a message will be displayed.

Downloading of data at regular intervals is compulsory in most member states. In the following situations download of data from the data memory is also recommended:

- Sale of the vehicle,
- Immobilisation of the vehicle,
- Replacement of a defective DTCO 1381.

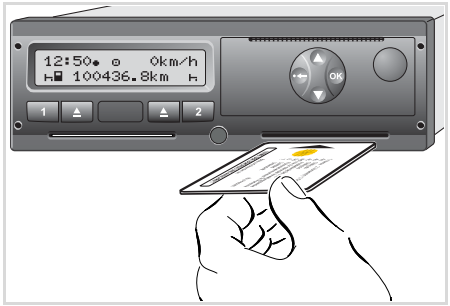
► Menu functions in the "company" mode

In principle, follow the same procedure when navigating in the menu functions:
➥ *Refer to “Calling up menu functions” on page 48.*

If, however, the company card is in card slot 2, all main menus assigned to card slot 2 will remain blocked.
➥ *Refer to “Menu access blocked!” on page 51.*

In this case, you can only display, print out or download data from a driver card inserted in card slot 1.
➥ *Refer to “Overview of the menu structure” on page 52.*

■ Company card insertion



Insert company card

1. Turn on the vehicle's ignition. (Required only for ADR variant *.)
2. Insert your company card (with the chip facing upward and the arrow pointing forward) into any card slot.

☞ The company card determines the language of the display. As an alternative, you can individually set a preferred language.
➥ *Refer to "Setting the language" on page 49.*

Step / menu display		*Explanation / meaning*
3.	welcome 12:50 10:50UTC	Greeting text; the set local time (12:50) and the UTC time (10:50) will appear for approximately 3 seconds.
4.	Sped. Muster ▬▬▬▬	The name of the company appears. A progress bar indicates that the company card is being read.
5.	company locked-in or already locked-in	If the company card is inserted the first time, the company will automatically be locked-in the DTCO 1381. The company lock function is activated. Thus, the protection of company-specific data is ensured!
6.	12:50 0km/h 1234[illegible]6.7km **1**	After reading is complete, the standard display will appear. The DTCO 1381 is in the "Company" mode, symbol "" **(1)**.

3

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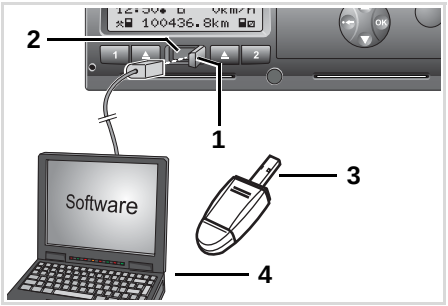
■ Prepare data download

Danger of explosion

Please observe the instructions for transport and handling of hazardous materials in explosion-risk environments.

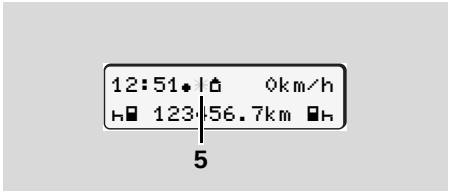
When loading and unloading hazardous materials ...

- **the covering cap (1) must be closed**
- **and no data may be downloaded.**



Connection to download interface

1. Open the covering cap **(1)** to the right.
2. Connect the Laptop **(4)** with the download interface **(2)**.
3. Start the reading software.
4. Or insert the download key **(3)** into the download interface.



Code: data transmission running (from Rel. 1.3)

The symbol **(5)** appears during the data transmission.

☞ Do not under any circumstances interrupt the connection to the download interface. Leave the ignition running in the ADR variant *.

5. After downloading the data, make sure you always close the covering cap **(1)**.

Data identification

Before the data is downloaded, the DTCO 1381 will attach a digital signature (identification) to the copied data. With this signature, the data can be assigned to the DTCO 1381 and permit checking of the data's completeness and authenticity.

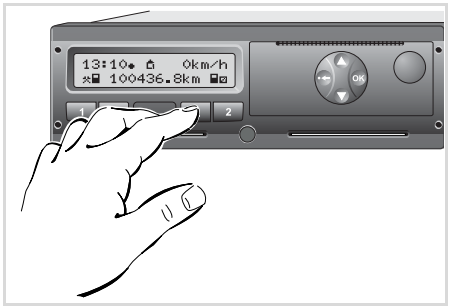
Remote download

With a fleet management system, data can also be downloaded remotely following authentication of a company card.

📖 For detailed information about the reading software, please refer to the appropriate documentation.

■ Company card withdrawal

☞ You can only withdraw the company card from the card slot when the vehicle is not moving!



Request company card

1. Turn on the vehicle's ignition. (Required only for ADR variant *.)
2. Press the appropriate ejection button ⏏ of the card slot in which the company card is located.

Step / menu display		*Explanation / meaning*
3.	Sped. Muster ▬▬▬▬▬▬▬▬▬▬▬▬	The name of the company appears. A progress bar shows that the DTCO 1381 is transferring data to the company card.
4.	lock-out company? *no*	**No company Lock-out** • Use the buttons ▲ / ▼ to select "**No**" and acknowledge with the button OK. **Company Lock-out** • Select "**Yes**" and acknowledge with the button OK. The company lock function is deactivated. The saved data of your company remains, but are locked out for any other company!
	lock-out company? *yes*	
	company locked-out	
5.	13:10 0km/h 1234[1]6.7km	The company card is released; the standard display appears. As applicable, a notice may appear that the periodical inspection is pending or the validity of the company card is expiring, ➥ *see page 72.* The DTCO 1381 is in the "Operational" mode again, symbol "⊙" **(1)**.

➪➪

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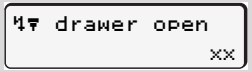
☞ **Please note:** The ejection from card slot 2 is blocked if the printer drawer is open! This will be indicated by the following operational note.

3



As soon as you close the printer drawer, the ejection will be started.

Operational mode

Inserting driver card(s)

Setting activities

Withdrawing driver card(s)

Driver/vehicle change during operation

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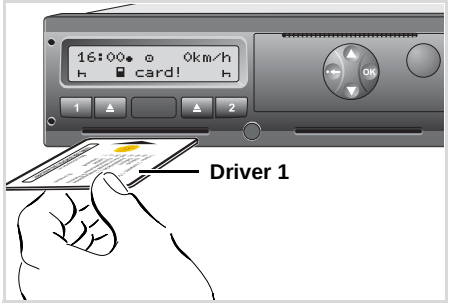
■ Inserting driver card(s)

> ⚠ **In accordance with proper driving habits described in the directive and in the general interest of traffic safety, please never attempt to insert the driver card(s) while the vehicle is moving!**

4

It is possible to insert the driver card while the vehicle is moving, but this will be shown as an event and saved on your driver card and in the DTCO 1381!
➥ *Refer to "Overview of the events" on page 64.*

1. Turn on the vehicle's ignition.
   (Required only for ADR variant *.)
   If no driver card is found in card slot 1 after the ignition is turned on, you will be asked to insert the driver card!
   ➥ *Refer to "Display after ignition on" on page 17.*



Operational note: Driver card in slot 1 missing

2. **Driver 1**, who will drive the vehicle, first inserts his driver card (with the chip facing upward and the arrow pointing forward) into card slot 1.
   The subsequent procedure is menu-guided.
   ➥ *Refer to "Menu guidance after inserting driver card" on page 29.*
3. As soon as the driver card of driver 1 has been read in, **driver 2** inserts his driver card into card slot 2.

☞ Wait until the standard display appears before inserting the next card. Otherwise, the entry procedure of the previously inserted driver card will be aborted!
➥ *Refer to "Aborting the entry procedure" on page 36.*

Remark
The menu procedures for driver 1 and driver 2 are identical. Menu guidance is carried out in the language stored on the driver card. As an alternative, you can individually set a preferred language.
➥ *Refer to "Setting the language" on page 49.*

☞ In **single-driver mode**, card slot 2 will remain empty!

▶ Menu guidance after inserting driver card

Step / menu display		*Explanation / meaning*
1.	welcome 16:00✱ 14:00UTC	Greeting text; the set local time (4 pm) and the UTC time (2 pm) will appear for approximately 3 seconds.
2.	Maier ▬▬ ⊙	The driver's last name appears. A progress bar indicates that the driver card is being read.
3.	last withdrawal 22.10.08 23:30	The date and time of the most recent card withdrawal will be displayed in UTC time for approximately four seconds.
4.	M entry addition? *no*	If you do not want to add any activities: • Select "**No**" and acknowledge. If you want to add activities: • Select "**Yes**" and acknowledge. ➥ *Refer to "Manual entries" on page 30.*
5.	✱▮▸ besin country 23.10 14:00 *:E*	• Select country at the beginning of the shift and acknowledge. • You can abort the entry of a country with the button ⬅. The standard display appears, step 7.
6.	✱▮▸ besin resion 14:00 E *AN*	You may be automatically asked to enter the region: • Select and acknowledge the region.

Use the buttons ▲ or ▼ to select the desired function and confirm your selection with the OK button.
➥ *Refer to "Entry request" on page 36.*

Use the buttons ▲ or ▼ to select the country and confirm your selection with the OK button.
➥ *Refer to "Selecting the countries" on page 36.*

➥ *Refer to "Symbols of the regions" on page 90.*

⇨⇨

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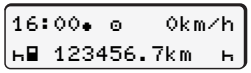
Step / menu display		*Explanation / meaning*
7.		The standard display will appear. The card symbol will be displayed only if the data of the driver card have been read completely. Symbols which are displayed before have the following meaning: "▁" The driver card is in the card slot. "▄" You can start the journey, relevant data are read in.

As long as the card symbol is missing in the display, the following functions are not possible at the moment:

- Calling up menu functions.
- Requesting a tachograph card.

➥ *Refer to "Reading the driver card" on page 36.*

4

▶ Manual entries

Manual entry enables you to enter any additional activities on the driver card. The following entries are possible after each time the driver card is inserted:

- You can continue a work shift and amend activities on the driver card which were carried out between withdrawing and inserting the card, see example 1, ➥ *see page 31.*
- You can continue a work shift, end a work shift, and/or prefix activities to a work shift, see example 2, ➥ *see page 33.*

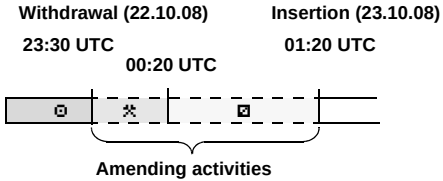
⚠ According to EU Regulations, activities which cannot be recorded by the DTCO 1381 (driver is not in the vehicle) must be added on the driver card by means of manual entries.

All time-based entries that you make on the DTCO 1381 when completing entries manually must be made in UTC time!
➥ *Refer to "Converting local time to UTC time" on page 82.*

▶ Continuing the work shift

Step / menu display		*Explanation / meaning*
1.	welcome 03:20 01:20UTC	Greeting text; the set local time (03:20) and the UTC time (01:20) will appear for approximately 3 seconds.
2.	Maier ----	The driver's last name appears. A progress bar indicates that the driver card is being read.
3.	last withdrawal 22.10.08 23:30	The date and time of the most recent card withdrawal will be displayed in UTC time for approximately four seconds.
4.	M entry addition? *yes*	• Select "**Yes**" and acknowledge.
5.	⏯? end of shift 22.10 23:30 *no*	• If you want to continue this work shift, select "**No**" and acknowledge.
6.	22.10 23:30 - 23.10 *00:20*	• Use the button ▲ to set the desired time and then acknowledge.
7.	22.10 23:30 - 23.10 00:20 ⚒	• Set the desired activity "⚒" and acknowledge.

Example 1



Use the buttons ▲ or ▼ to select the desired function and confirm your selection with the OK button.
➥ *Refer to "Entry request" on page 36.*

⇨⇨

4

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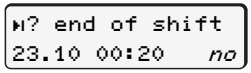
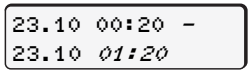
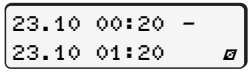
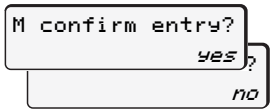
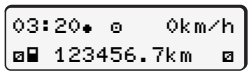
Step / menu display		*Explanation / meaning*
8.		• The work shift continues: Select "**No**" and acknowledge.
9.		• Use the button ▲ to set the desired time and then acknowledge.
10.		• Set the desired activity "⧈" and acknowledge.
11.		• Accept entries: Select "**Yes**" and acknowledge. or • Select "**No**", back to step 4. You can repeat the entry/entries.
12.		The standard display will appear. The card symbol will be displayed only if the data of the driver card have been read completely. Symbols which are displayed before have the following meaning: "⎯" The driver card is in the card slot. "▬" You can start the journey, relevant data are read in.

4

As long as the card symbol is missing in the display, the following functions are not possible at the moment:

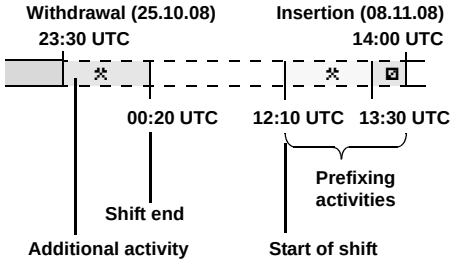
- Calling up menu functions.
- Requesting a tachograph card.

➥ *Refer to "Reading the driver card" on page 36.*

▶ Prefixing activities to a shift

Step / menu display		*Explanation / meaning*
1.	welcome 15:00 14:00UTC	Greeting text; the set local time (15:00) and the UTC time (14:00) will appear for approximately 3 seconds. **Note:** For this DTCO 1381, the local time has already been set to the end of daylight savings time between "Last withdrawal" and "Inserting" the driver card.
2.	Rosenz ----	The driver's last name appears. A progress bar indicates that the driver card is being read.
3.	last withdrawal 25.10.08 23:30	The date and time of the most recent card withdrawal will be displayed in UTC time for approximately four seconds.
4.	M entry addition? *yes*	• Select "**Yes**" and acknowledge.
5.	M? end of shift 25.10 23:30 *no*	• If you want to continue this shift, select "**No**" and acknowledge.
6.	25.10 23:30 - 26.10 *00:20*	• Use the button ▲ to set the desired time and then acknowledge.

Example 2



Use the buttons ▲ or ▼ to select the desired function and confirm your selection with the OK button.
➥ *Refer to “Entry request” on page 36.*

⇨⇨

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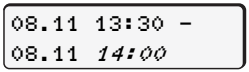
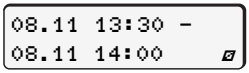
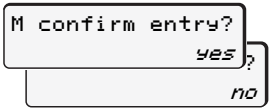
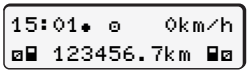
Step / menu display		*Explanation / meaning*
7.	25.10 23:30 - 26.10 00:20 ✱	• Set the desired activity "✱" and acknowledge.
8.	⏯? end of shift 26.10 00:20 *yes*	• The preceding work shift is ended: Select "**Yes**" and acknowledge.
9.	⏯◆? end country 26.10 00:20 *:D*	• Select the country at the end of the shift and acknowledge the end of this shift with the button OK. • You can skip the entry of a country with the button ←.
10.	⊖⏯? begin 08.11 *12:10*	• Use the button ▼ to retrospectively set the beginning of the new shift; then acknowledge.
11.	◆⏯? beg. country 08.11.12:10 *:D*	• Select country at the beginning of the shift and acknowledge. • You can skip the entry of a country with the button ←.
12.	08.11 12:10 - 08.11 *13:30*	• Use the button ▲ to set the desired time of the completed activity and then acknowledge.
13.	08.11 12:10 - 08.11 13:30 ✱	• Set the desired activity "✱" and acknowledge.

➥ *Refer to “Selecting the countries” on page 36.*
If necessary, you may be asked to enter the region after having entered the country.

⇨⇨

Step / menu display		*Explanation / meaning*
14.		• Use the button ▲ to set the desired time of the additional activity and then acknowledge.
15.		• Set the desired activity "⧈" and acknowledge.
16.		• Accept entries: Select "**Yes**" and acknowledge. or • Select "**No**", back to step 4. You can repeat the entry/entries.
17.		The standard display will appear. The card symbol will be displayed only if the data of the driver card have been read completely. Symbols which are displayed before have the following meaning: "▁" The driver card is in the card slot. "▄" You can start the journey, relevant data are read in.

As long as the card symbol is missing in the display, the following functions are not possible at the moment:

- Calling up menu functions.
- Requesting a tachograph card.

➥ *Refer to "Reading the driver card" on page 36.*

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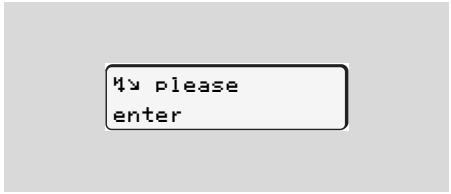
► Things to note when completing entries

Entry request

If no entry is made during the entry procedure, the following display will appear after 30 seconds.



If the button OK is pressed within an additional 30 seconds, then the entry can be continued. Otherwise, the driver card will be read to completion and the standard display will appear.
The DTCO 1381 saves any entries that have already been acknowledged with the button OK.

Selecting the countries

The most recently entered country appears first. By pressing the buttons ▲ / ▼, the four most recently entered countries will appear.

- Symbol: Colon in front of the country symbol ":B".

Further selection is made in alphabetic order starting with letter "A":

- using key ▲ A, Z, Y, X, W, ..., etc.;
- using key ▼ A, B, C, D, E, ..., etc.

➥ *Refer to “Country symbols” on page 89.*

Pressing and holding down the keys ▲ or ▼ will accelerate the selection (auto-repeat function).

Aborting the entry procedure

The DTCO 1381 will cancel the entry procedure in the following cases:

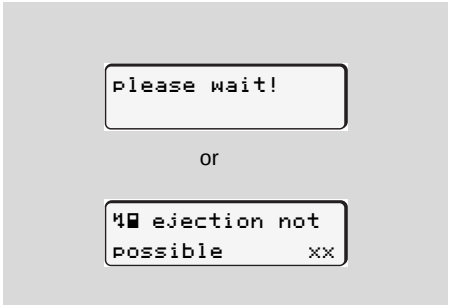
- Driving begins
- A second driver card is inserted.

In both situations, the driver card will be read to completion. The DTCO 1381 saves any entries that have already been acknowledged with the button OK.

Reading the driver card

☞ While the driver card is being read, some functions on the DTCO 1381 are not possible.

If a menu button or the ejection button is pressed, a message will be displayed.

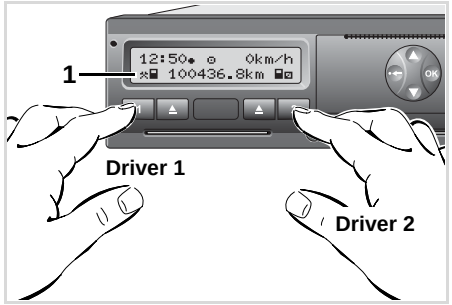


■ Setting activities

- ⊙ = Driving time (automatic when driving)
- ⚒ = Other working times
- ⧈ = Availability (waiting times, co-driver time, driver 2 sleeper-cab time during the trip)
- ⊢ = Break times and rest periods

▶ Manual setting

☞ The activities may be set only if the vehicle is stationary!



Setting activitiy

1. Driver 1 presses the button 1. Continue pressing the button until the desired activity (⊢ ⧈ ⚒) appears in the display **(1)**.
2. Driver 2 presses the button 2.

▶ Automatic setting

The DTCO 1381 switches automatically to the following activities:

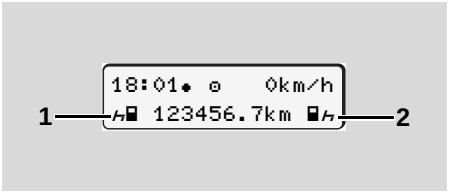
for ...	Driver 1	Driver 2
Driving	⊙	⧈
Vehicle stop	⚒	⧈

⚠ **Important!**
At the end of a shift or during a break, always set the activity to "⊢". Otherwise, the DTCO 1381 will save "other" working time "⚒" for driver 1 and availability time "⧈" for driver 2!

▶ Automatic setting after ignition on/off *

After ignition on/off, the DTCO 1381 can be configured to switch to a defined activity; for example "⊢".

The activity **(1)** and/or **(2)** which changes automatically on the basis of ignition on or off, flashes for ca. 5 seconds and is only visible in the standard display.



Flashing of the activity(ies)

☞ As necessary, change the set activity according to your current task.

⇨⇨

4

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Note

Which activity is triggered automatically by the DTCO 1381 on switching the ignition on / off can be programmed according to the customer's wishes by an authorised workshop; ➥ *see page 113.*

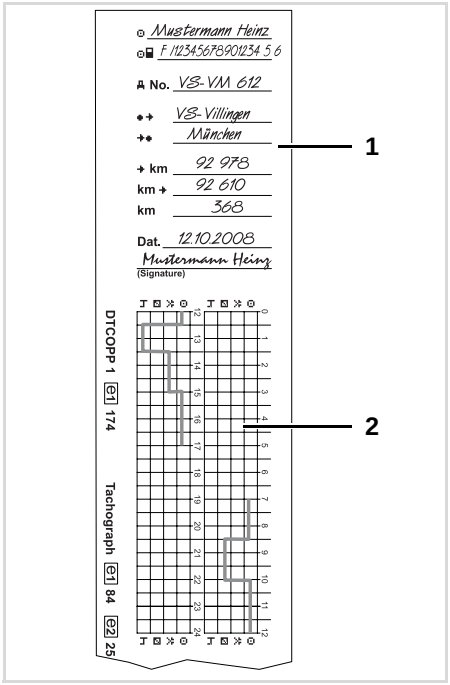
► Handwritten activity entries

4

According to the directive, you (as driver) are obligated to note activities with handwritten entries in the following cases:

- When the DTCO 1381 is defective.
- If the driver card is lost, stolen, damaged, or if the driver card malfunctions, a daily printout from the DTCO 1381 must be generated at the beginning and end of the journey. If necessary, you must insert the availabilty and other working times by handwritten entries.

The rear side of the paper roll can be used to make handwritten entries **(2)** of your activities and to complete the printout by personal information **(1)**.



Handwritten activity entries

Personal information

⊙	First and last name
⊙▮	Number of the driver card or the driving licence
No.	Vehicle registration number
●→	Location at the beginning of the shift
→●	Location at the end of the shift
→km	Odometer reading at the end of the shift
km→	Odometer reading at the beginning of the shift
km	Kilometres travelled
Date	Date
Sig.	Personal signature

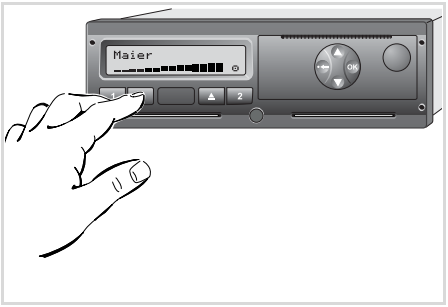
⚠ Please observe the legal stipulations applicable in your country!

■ Withdrawing driver card(s)

☞ In principle, the driver card can remain in the card slot at the end of the work shift. However, it is best to withdraw the driver card from the DTCO 1381 in order to prevent misuse!

⚠ When the driver or vehicle is changed, the driver card should generally be withdrawn from the card slot.
➥ *Refer to "Driver/vehicle change during operation" on page 41.*

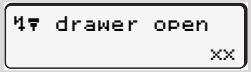
☞ You can withdraw the driver card from the card slot only when the vehicle is not moving!



Driver card request

1. Turn on the vehicle's ignition. (Required only for ADR variant *.)
2. Enter the corresponding activity; for example, at the end of the work shift to "⌙".
3. Press the ejection button ⏏ for card slot 1 or card slot 2.
4. The subsequent procedure is menu-guided.
➥ *Refer to "Menu guidance after withdrawing driver card" on page 40.*

☞ The ejection from card slot 2 is blocked if the printer drawer is open! This will be indicated by the following operational note.



As soon as you close the printer drawer, the ejection will be started.

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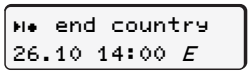
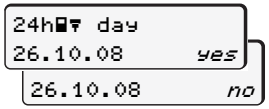
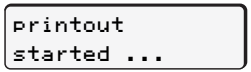
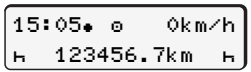
► Menu guidance after withdrawing driver card

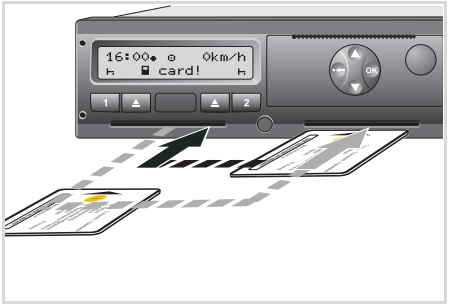
Step / menu display		*Explanation / meaning*
1.		The driver's last name appears. A progress bar shows that the DTCO 1381 is transferring data to the driver card.
2.		• Select country at the end of the shift and acknowledge. • Or you can skip the entry of a country with the button ⬅.
3.		Continues writing driver card
4.		• If you need a printout, select "Yes" and acknowledge. • If you do not need a printout, select "No" and acknowledge.
5.		When the function is selected, the continuation of the action will appear in the display.
6.		The driver card is released; the standard display appears. As applicable, a notice may appear that the periodical inspection is pending or the validity of the driver card is expiring, ➥ *see page 72.*

The procedures for driver 1 and driver 2 are identical.

Use the buttons ▲ or ▼ to select the country and confirm your selection with the OK button.

If necessary, you may be asked to enter the region after having entered the country.

■ Driver/vehicle change during operation



Exchanging driver card(s)

Case 1:
The crew exchanges positions, driver 2 becomes driver 1

1. Withdraw the driver cards from their respective card slots and exchange them by inserting them into the other card slots.
   Driver 2 (**now driver 1**) first inserts his driver card into card slot 1 and driver 1 (**now driver 2**) inserts his driver card into card slot 2.
2. Set the desired activity.

Case 2:
Driver 1 and/or driver 2 leave the vehicle

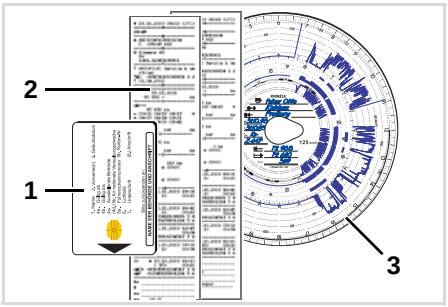
1. The driver who is leaving the vehicle requests his driver card, generates a daily printout, if necessary, and takes the driver card out of the DTCO 1381.
2. The new vehicle crew insert their new driver cards, depending on function (driver 1 or driver 2), into the card slots.

Case 3 – Mixed operation:
Vehicle usage with different tachograph types

- For example, analogue tachographs or ...
- Digital tachographs with driver card according to EC Regulation (EEC) no. 3821/85 annex I B, e.g. DTCO 1381.

During an inspection, the driver must be able to present the following items for the current day and for the previous 28 calendar days:

- the driver card **(1)**,
- the relevant daily printouts from the digital tachograph **(2)**, e.g., if the driver card is damaged or fails to operate properly,
- the charts covered with data **(3)**
- and, if necessary, handwritten information concerning the activities.



⚠ Please observe the legal stipulations applicable in your country!

4

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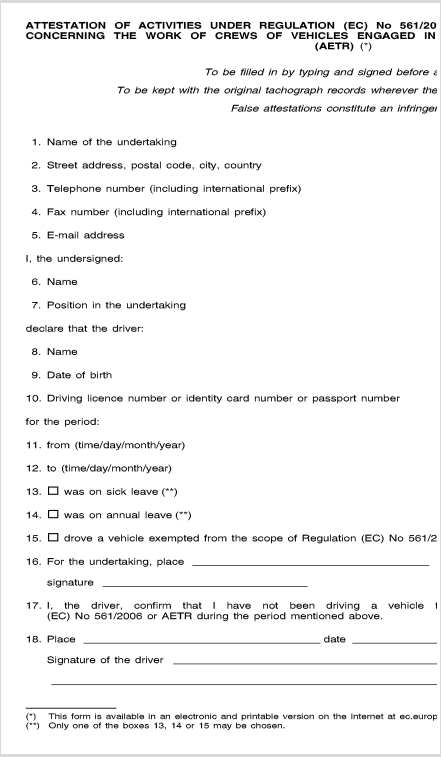
▶ Documents to be kept while driving

Pursuant to directive 2006/22/EC of the European Commission, the driver must have a certificate on the following circumstance of the last 28 days:

- Period in which the driver was on convalescence holiday.
- Period in which the driver was on recreation holiday.
- Period for a journey which took place outside of the scope of application of Council Regulation (EC) No. 561/2006 or the AETR.

📖 You will find a printable version of the form on the Internet at: **ec.europa.eu**



ATTESTATION OF ACTIVITIES UNDER REGULATION (EC) No 561/20
CONCERNING THE WORK OF CREWS OF VEHICLES ENGAGED IN
(AETR) (*)

To be filled in by typing and signed before a
To be kept with the original tachograph records wherever the
False attestations constitute an infringe

1. Name of the undertaking
2. Street address, postal code, city, country
3. Telephone number (including international prefix)
4. Fax number (including international prefix)
5. E-mail address

I, the undersigned:

6. Name
7. Position in the undertaking

declare that the driver:

8. Name
9. Date of birth
10. Driving licence number or identity card number or passport number

for the period:

11. from (time/day/month/year)
12. to (time/day/month/year)
13. ☐ was on sick leave (**)
14. ☐ was on annual leave (**)
15. ☐ drove a vehicle exempted from the scope of Regulation (EC) No 561/2
16. For the undertaking, place _____
    signature _____
17. I, the driver, confirm that I have not been driving a vehicle (EC) No 561/2006 or AETR during the period mentioned above.
18. Place _____ date _____
    Signature of the driver _____

(*) This form is available in an electronic and printable version on the Internet at ec.europ
(**) Only one of the boxes 13, 14 or 15 may be chosen.

Extract: Form sheet Activities
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:099:0014:0015:EN:PDF

Printer Handling

Insert paper roll

Printout of data

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■ Insert paper roll

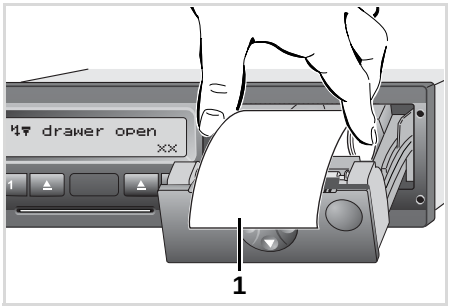
☞ **Please note!**
Use (order) only paper rolls (original VDO printer paper) on which is visible the following markings:

- Tachograph type (DTCO 1381) with approval mark "e1 84"
- and approval marks "e1 174" or "e1 189".

Danger of injury
Depending on the volume of information printed, the thermal printing head may be very hot. You can burn your fingers!
Exercise caution when inserting the roll of paper or wait until the printing head has cooled.

Press the unlock button

1. Press the unlock button. The printer drawer opens.



Insert paper roll

2. Insert new roll of paper as shown in the image above.

☞ Make sure that the paper roll does not become jammed in the printer drawer and the start of the paper **(1)** extends beyond the edge of the printer drawer!

3. Close printer drawer.
The printer will automatically start feeding the paper forward.

Danger of injury
Make sure that the printer drawer is always closed. You and other persons might be injured by an open printer drawer.

4. The printer is ready for operation. You can start a printout or the interrupted printout (at the end of the paper roll) will be continued automatically.

■ Printout of data

▶ Start printout

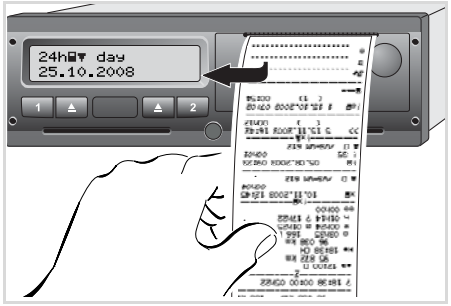
☞ Printing is only possible when ...

- the vehicle is stationary and the ignition is switched on (required only for ADR variant *),
- the printer drawer is closed and a roll of paper is inserted,
- no other faults prevent printing.

1. Either the menu guidance will command you to make a daily printout after "Withdraw driver card" **(1)**, or you request the corresponding printout through the menu **(2)**.
➥ *Refer to "Calling up menu functions" on page 48.*

2. Acknowledge the menu display with the OK button, the printout will start.

3. Wait until the printout is complete.



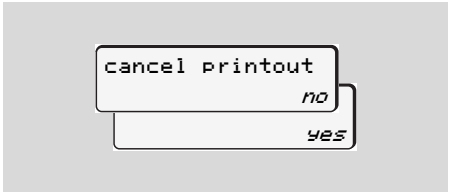
Tear off the printout from the paper roll

4. Pull the printout up and down over the cutting edge and then tear the printout from the roll of paper.

5. The printout should be kept clean and protected from dirt, strong light, and sunlight.

▶ Cancel printout

1. While the printout is running, press the button OK and the following question will appear.



2. Use the buttons ▲ / ▼ to select the desired functions and confirm your choice with the button OK. The printout will be either continued or cancelled.

5

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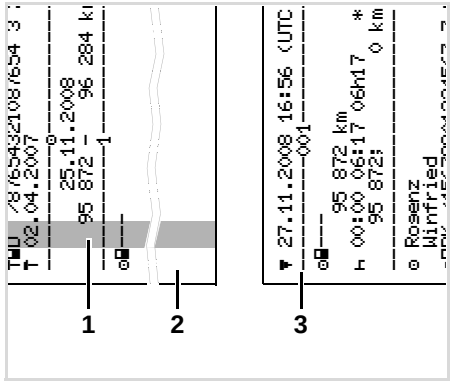
5

▶ Things to note when printing

- If the shift started before 00:00 UTC time, after "Withdraw driver card" the DTCO 1381 will automatically print the daily values of the previous day and the current day.
- You will see a coloured mark **(1)** on the rear side of the printout shortly before the paper roll is empty.
- When the paper roll is empty, you will see the following message.

- If a new roll of paper is inserted within one hour, the DTCO 1381 automatically continues the printout.
- A notice is given in the first two lines of the subsequent printout **(3)**.



Continuing the printout at the end of the paper roll.

(1) Coloured mark (on the rear side)
(2) End of the interrupted printout
(3) Continuation of the interrupted printout
Line 1: Starting time of printout
Line 2: Counter of the successive prints

☞ Individual lines of the first printout may be repeated on the second printout!

▶ Clear paper jam

If a printout is not torn off properly, the paper may become jammed and then prevent the next printout from coming through the paper slot.

1. Open printer drawer.
➥ *Refer to "Insert paper roll" on page 44.*
2. Tear off any crumpled paper from the roll and remove any remaining bits of paper from the printer drawer.
3. Insert paper roll again and close printer drawer.

Please observe the given warning messages!
➥ *Refer to "Insert paper roll" on page 44.*

Menu functions

Calling up menu functions

Overview of the menu structure

Main menu printout driver 1 / driver 2

Main menu, vehicle printout

Main menu entry driver 1 / driver 2

Main menu entry vehicle

Main menu display driver 1 / driver 2

Main menu display vehicle

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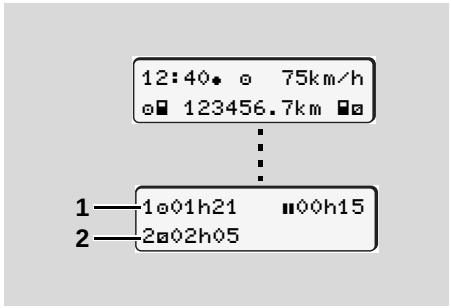
■ Calling up menu functions

▶ When driving

1. Press any menu key while driving and current times of the inserted driver card will appear.
2. The standard display will appear again after any key is pressed again or after 10 seconds.

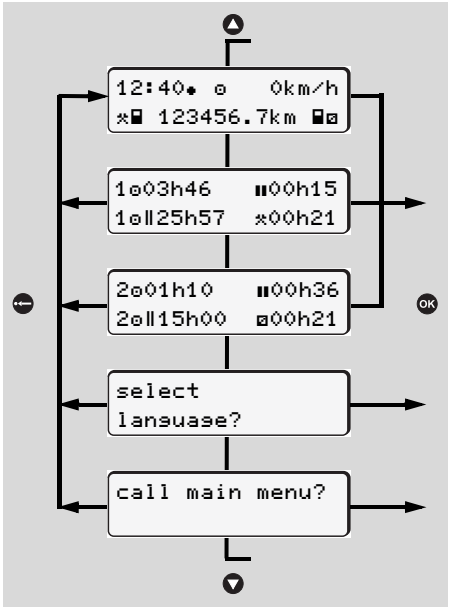


Data display during trip

(1) Times of driver 1
(2) Times of driver 2

➥ *For more details, see "Data display during trip" on page 18.*

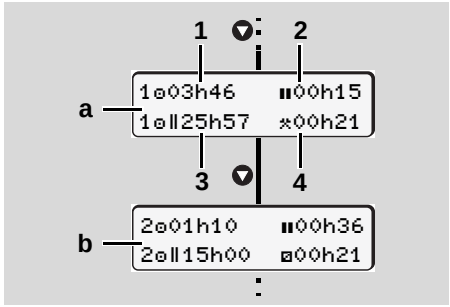
▶ When the vehicle is stationary



Navigating in the standard display

1. Starting from the standard display, you can press the buttons ▲ / ▼ to display detailed time of the inserted driver card(s).
   ➥ *Refer to "Displaying the times of the driver card" on page 49.*
   or
2. You can change the language of the display / menu guidance.
   ➥ *Refer to "Setting the language" on page 49.*
   or
3. You can call up the extensive menu functions by pressing the button OK.
   ➥ *Refer to "Overview of the menu structure" on page 52.*
4. Use the buttons ▲ / ▼ to page up or the ⏎ button to return directly to the standard display.

▶ Displaying the times of the driver card



Data display of driver 1 and 2

1. Press the button ▼ to display the times of the driver card(s)

(a) Times of driver 1
(b) Times of driver 2

(1) Driving time since a break of at least 45 minutes
(2) Sum of the valid breaks
(3) Driving time over two weeks
(4) Duration of the set activity

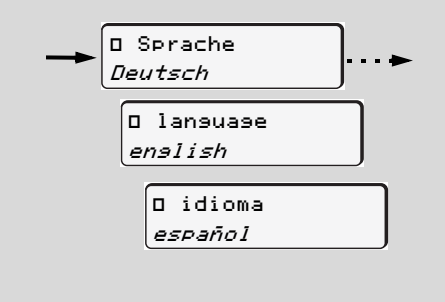
☞ If the driver card is missing, times (except for pos. 3) which are assigned to the respective card slot "1" or "2" will appear.

▶ Setting the language

☞ Observe the paragraph "Storing the language setting" so that the DTCO 1381 will temporarily memorise the desired language.

1. Use the buttons ▲ / ▼ to select the function "select language?" and press the button OK.

2. Use the buttons ▲ / ▼ to select the desired function and confirm your selection with the OK button.



Select the desired language

3. The DTCO 1381 indicates the action for about three seconds in the selected language.

Storing the language selection

If, at the time of the language setting, only your driver card or company card is in the card slot 1, the DTCO 1381 memorises the preferred language for your card number.

When withdrawing / inserting the tachograph card again, the menu guidance as well as all displayed texts will be in the selected language.

The DTCO 1381 reserves up to five storage areas. If all storage areas are full, the oldest saved value will be overwritten.

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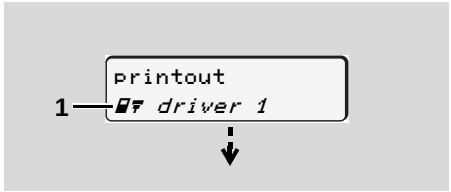
▶ Navigating in the menu functions

☞ The menu functions may be called only if the vehicle is stationary!

Turn on the vehicle's ignition if you plan to printout or display data in the ADR variant *.

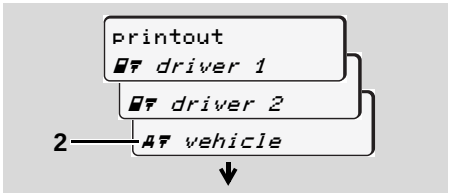
The procedure is always the same and will be described below in detail.

1. Press the button OK, you will be in the first main menu.



1. Main menu

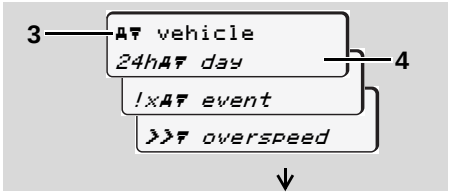
The flashing action in the second line (*shown in italics*) **(1)** indicates that there are additional selection possibilities.



Paging in the main menu

2. You can use the buttons ▲ / ▼ to select the desired main menu, such as a printout of the vehicle data **(2)**.

3. Confirm your selection with the button OK.



Selecting a menu function

The selected main menu **(3)** will appear, the possible functions will flash in the second line **(4)**.

4. Use the buttons ▲ / ▼ to select the desired function, such as a daily printout **(4)**.

5. Use the OK button to confirm your selection.

Select desired day

6. Use the buttons ▲ / ▼ to select the desired day **(5)**.

7. Confirm your selection with the button OK. The DTCO 1381 will indicate the selected action for three seconds. The most recently selected menu entry will then appear.

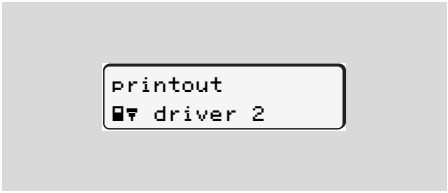
8. Use the buttons ▲ / ▼ to select another day for a printout.

9. Or press the button ⊖ and return to the next-higher menu level.

▶ **Menu access blocked!**

Example 1: The driver card is missing or a company card / control card is in the card slot.

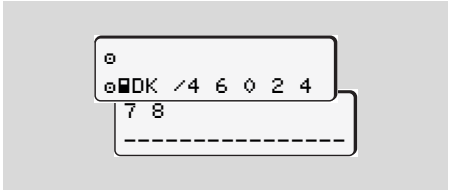
The main menu will be shown, but nothing will be flashing in the second line.



If you select the function with the button OK, the following message will appear.

Example 2: Data access blocked

Access to saved data is regulated by access rights in accordance with the regulations and implemented by means of the respective tachograph cards. Lack of proper authentication is indicated as follows:



The data appears truncated. Personal data is partially or completely masked.

▶ **Leaving menu functions**

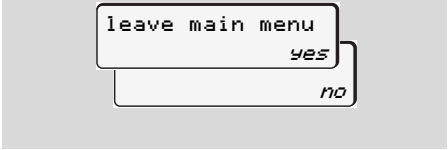
Automatically

The menu is exited automatically in the following situations:

- after a tachograph card is inserted or withdrawn
- or when driving commences.

Manually

1. Continue pressing the button ←, until the following question appears.



2. Use the buttons ▲ / ▼ to select "**Yes**" and acknowledge with the button OK. Or use the button ← to skip the query. The standard display will appear.

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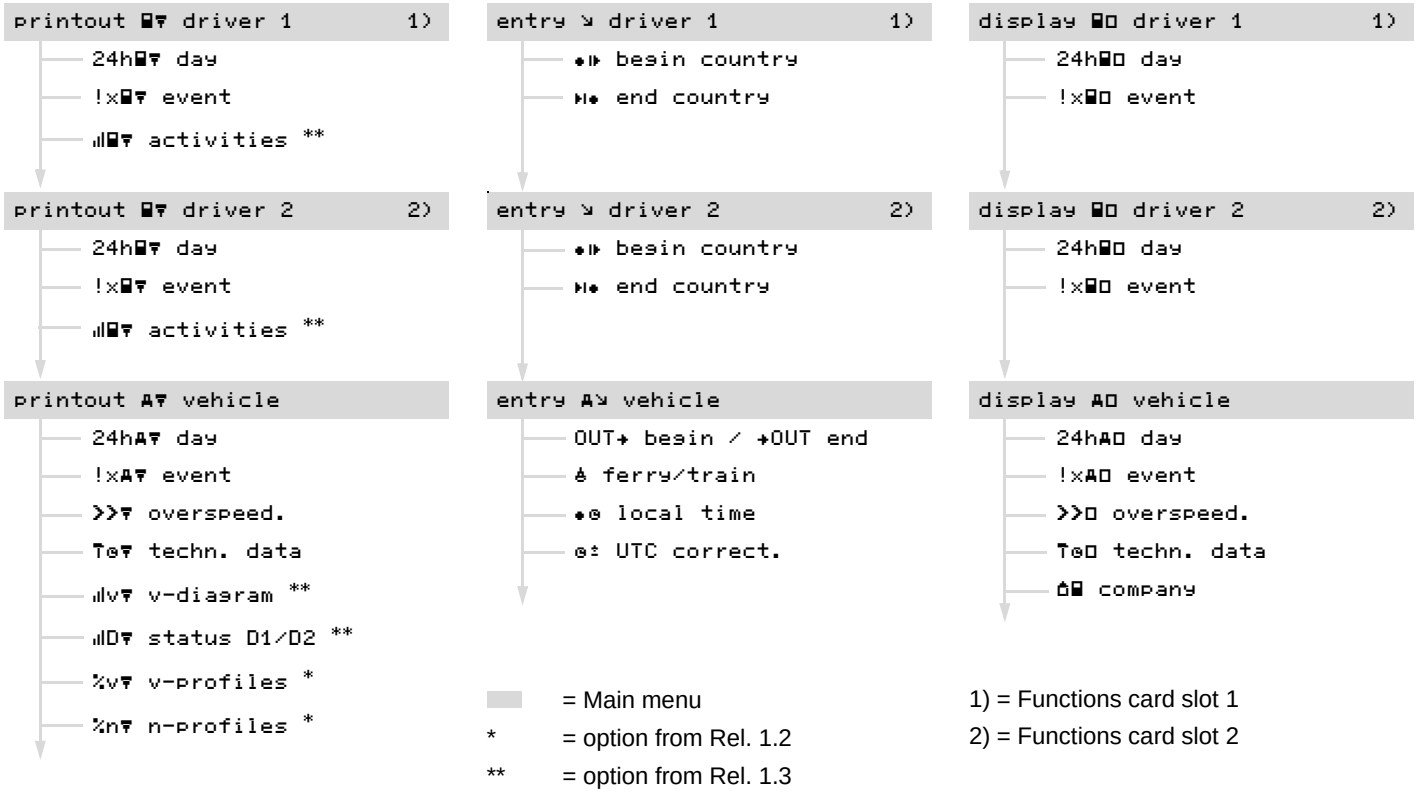
■ Overview of the menu structure



= Main menu

* = option from Rel. 1.2

** = option from Rel. 1.3

1) = Functions card slot 1

2) = Functions card slot 2

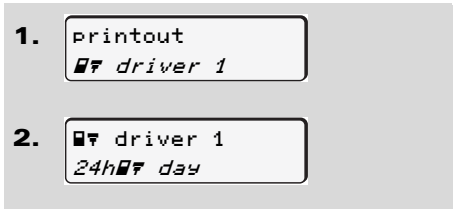
■ Main menu printout driver 1 / driver 2

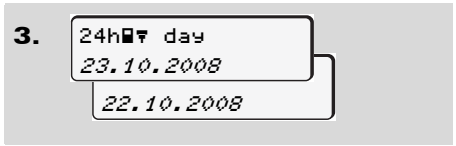
From this menu you can print out the data of an inserted driver card. Select the listed functions step by step.

☞ Switch on the ignition in the ADR variant *. Otherwise, an operational note will appear when selecting a printout. The printout will start only after the ignition is "on" and selection is made again.

Remark
The procedure for driver 2 is identical to that for driver 1 and will not be explained separately.

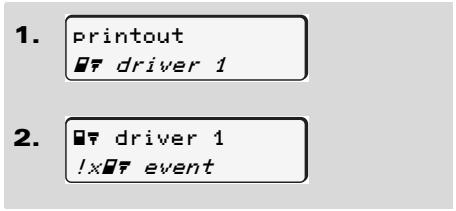
▶ Print daily value





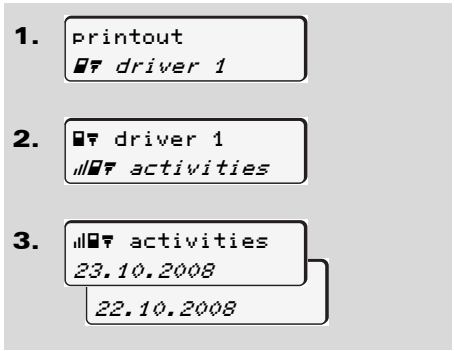
A printout of all activities on the selected day will be made, ➥ *see page 91.*

▶ Print events



A printout of all saved or still active events and faults will be made, ➥ *see page 92.*

▶ Print activities *



From the selected day on, there is a printout of all activities of the last 7 calendar days, ➥ *see page 96.*

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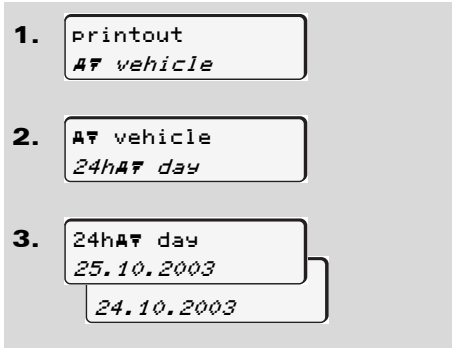
■ Main menu, vehicle printout

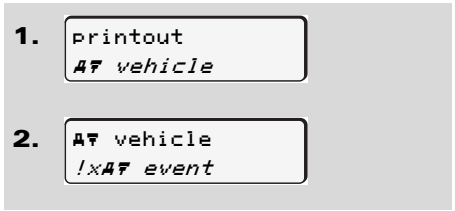
From this main menu you can print data from the data memory. Select the listed functions step by step.

▶ Print daily value from the data memory



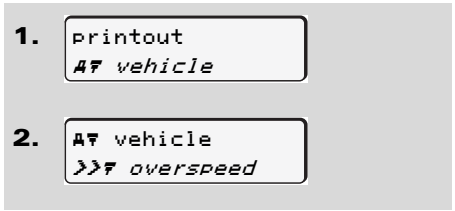
A printout of all driver activities in chronological order, separated by driver 1/ driver 2 will be made, ➥ *see page 93.*

▶ Print events from the data memory



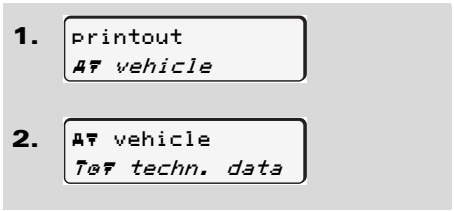
A printout of all saved or still active events and faults will be made, ➥ *see page 94.*

▶ Print instances of over-speeding



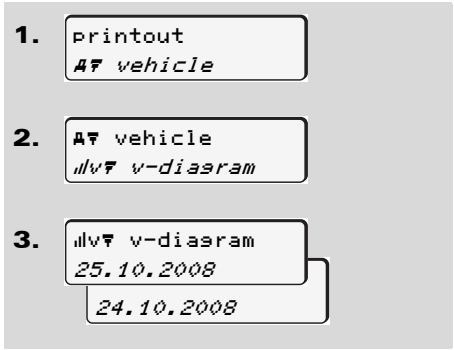
A printout will be made of instances when the speed value set at the DTCO 1381 was exceeded, ➥ *see page 95.*

▶ Print technical data



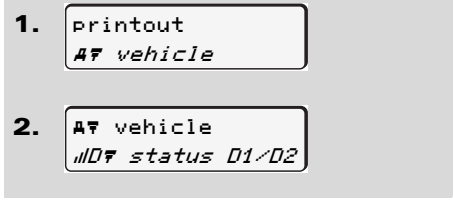
A printout of data about vehicle identification, sensor identification, and calibration will be made, ➥ *see page 95.*

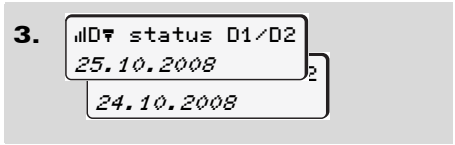
▶ **Print v-diagram ***



From the selected day on, there is a printout of speed data, ➥ *see page 96.*

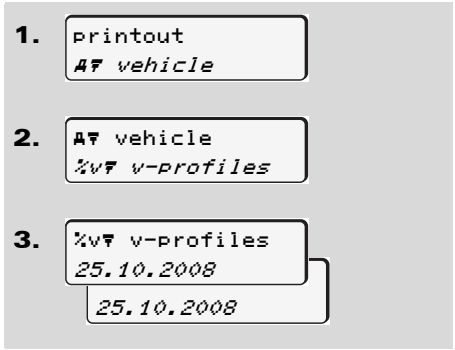
▶ **Print D1/D2 status ***





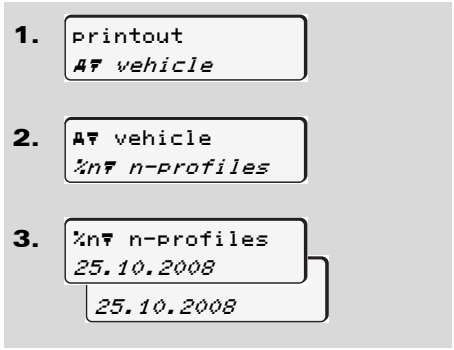
From the selected day on, there is a printout of status inputs of the last 7 calendar days, ➥ *see page 96.*

▶ **Print speed profiles ***



A profile printout of the driven speeds will be made, ➥ *see page 97.*

▶ **Print rpm profiles ***



A profile printout of the engine speed rpm will be made, ➥ *see page 97.*

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■ Main menu entry driver 1 / driver 2

You can enter the country independently of the function of inserting or withdrawing the driver card.

> ⚠ **According to the regulations, driver 1 and driver 2 must separately enter into the tachograph the country in which the respective driver begins or ends his shift.**

Remark

The procedure for driver 2 is identical to that for driver 1 and will not be explained separately.

▶ Enter Begin country

Select the following functions step by step:

If necessary, you may be automatically asked to enter the region (step 4).

▶ Enter End country

Select the following functions step by step:

If necessary, you may be automatically asked to enter the region (step 4).

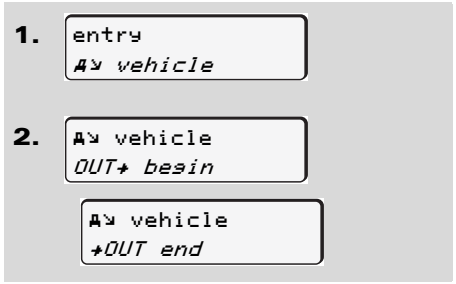
■ Main menu entry vehicle

You can perform the following entries in this main menu.

▶ Enter Out beginning / end

If you use the vehicle for a journey outside of the scope of the regulations, you can set the function to "Out of Scope" and/or end it again.

Select the following functions step by step.

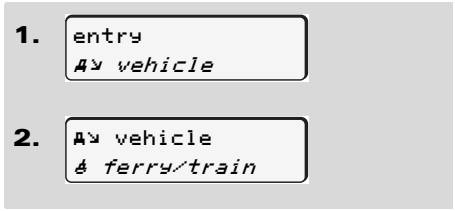


The setting "Out of Scope" ends automatically as soon as you insert a driver card into card slot 1 or withdraw a driver card from slot.

▶ Enter Beginning of ferry / train

You can mark the time, the vehicle is located on a ferry or on a train.

Select the following functions step by step.

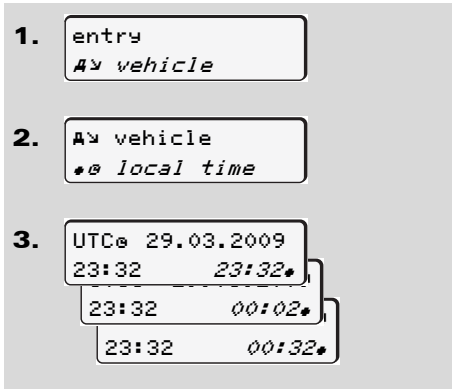


The registration of this operation ends automatically as soon as the vehicle moves.

▶ Set Local time

☞ Read and understand the chapter "Time management" before attempting to make any changes!
➥ *Refer to "Time management" on page 81.*

Select the listed functions step by step.



In the standard display, you may adjust the time to the local time zone as well as to the beginning or end of daylight-savings time in steps of ±30 minutes.

⚠ Please observe the legal stipulations applicable in your country!

6

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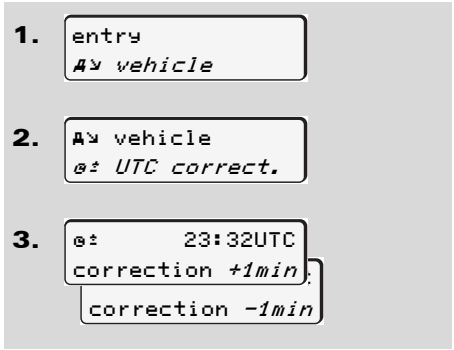
► Make UTC correction

You can correct the UTC time up to a maximum of ±1 minute per week. Greater deviations can only be corrected by an authorised workshop.

Select the following functions step by step:



⚠ If the deviation of the displayed UTC time is more than 20 minutes, please contact an authorised workshop!

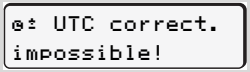
☞ The menu function is disabled in the following situations:

- A correction has already taken place within the last seven days.

or

- You are trying to correct the UTC time between one minute before and one minute after midnight.

When selecting, the following note will appear for three seconds.

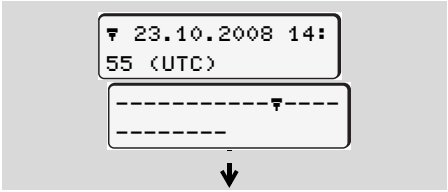


■ Main menu display driver 1 / driver 2

From this menu you can display the data of an inserted driver card.

☞ In the ADR variant *, the data can be displayed only when the ignition is turned on.

Information on the display
The data will appear on the display similar to how it appears on a printout, although one printout line (24 characters) will be shown divided onto two lines.



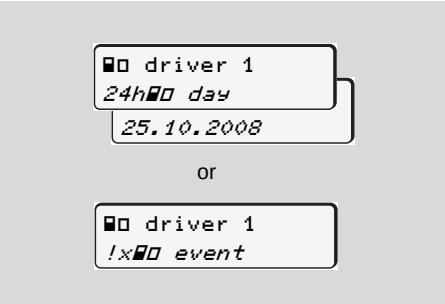
Example for the data display

If you page backward with the ▲ / ▼ buttons while paging through the information, you will be able to move backward only about 20 printout lines.

Use the ⊖ button to leave the display.

Remark
Calling a function is identical to that of a printout and will not be explained separately.

Select the possible displays for driver 1 or driver 2 step by step.



You can display all activites of the selected day or the saved or still active events and faults by paging.

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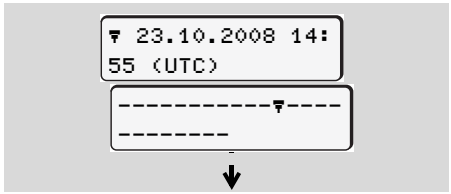
■ Main menu display vehicle

From this main menu you can display data from the data memory.

☞ In the ADR variant *, the data can be displayed only when the ignition is turned on.

Information on the display
The data will appear on the display similar to how it appears on a printout, although one printout line (24 characters) will be shown divided onto two lines.



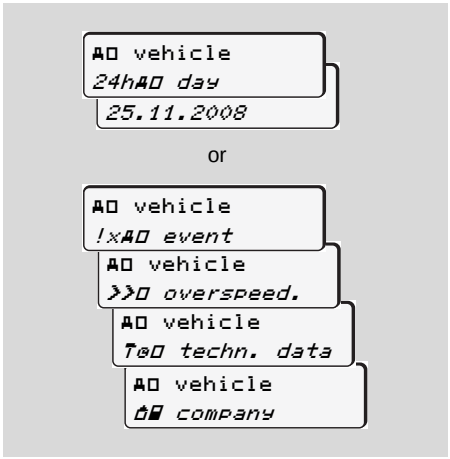
Example for the data display

If you page backward with the ▲ / ▼ buttons while paging through the information, you will be able to move backward only about 20 printout lines.

Use the ⊖ button to leave the display.

Remark
Calling a function is identical to that of a printout and will not be explained separately.

Select the possible functions step by step.



By paging, you can:

- display all driver activities in chronological order.
- display of all saved or still active events and faults.
- display the instances when the set speed was exceeded.
- display data about vehicle identification, sensor identification, and calibration.

or

- display the number of the company card of the registered company. If no company is registered, then "___" will appear.

Messages

A message appears

Overview of the events

Overview of the faults

Work time warnings

Overview of the operational notes

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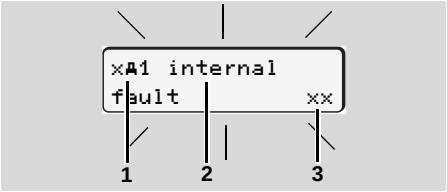
■ A message appears



Display of a message

(1) Pictogram combination, if necessary, with card slot number
(2) Plain text of the message
(3) Memory code

Risk of Accident

While driving, messages can appear in the display. It is also possible that the driver card will be automatically ejected due to a security breach.

Do not be distracted by this; instead, continue to focus all of your attention on driving safely.

The DTCO 1381 permanently records the driver-based and vehicle-based data and monitors the system's functions. Errors in a component, in the device, or in the operating procedure will be displayed immediately after occurrence and are divided functionally into the following groups:

- ! = Event
- ⚒ = Fault
- ↯ = Work time warning
- ↯ = Operational notes

☞ During card-based messages, the card slot number will appear in addition to the pictogram.

▶ Characteristics of the messages

Events, faults
The display's backlighting flashes for approximately 30 seconds; at the same time, the cause of the fault appears with a pictogram combination, plain text of the message, and memory code.

You must acknowledge these messages using button OK.
The DTCO 1381 also saves (in the driver card's data memory) data related to the event or the fault in accordance with the memory regulations contained in the directive. You can display or print this data through the menu function.

Working time warnings
Working time warnings warn the driver about excessive driving times. The message is backlighted and must be confirmed by means of button OK.

Operational notes
Operational notes are displayed without flashing backlighting and (with the exception of some messages) disappear automatically after 3 or 30 seconds.

➪➪

Instrument display
If an instrument display is built into the vehicle, the functional monitoring " Ⓣ " will refer to messages on the DTCO 1381.

📖 For detailed information refer to the vehicle's operating instructions.

▶ Acknowledgement of messages

1. If you press the button OK, the flashing of the backlighting will stop immediately.
2. Press the button OK again, the message disappears and the standard display will appear again.

Remark
The operational note disappears when pressing the button OK for the first time.

☞ If you do not acknowledge a message while driving, the message will appear every ten seconds alternately with the standard display.

If several messages are pending, then you must acknowledge the individual messages one after the other.

⚠ If the tachograph fails to operate properly, you (as driver) will be responsible to note information about the activities which will no longer be properly recorded or printed by the tachograph on a separate sheet or on the rear side of the paper roll!
➥ *Refer to “Handwritten activity entries” on page 38.*

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■ Overview of the events

If an event repeats on a continuous basis, please contact an authorised workshop.

Picto / reason	*Meaning*	*Measure*
!🔒 security breach	The following are possible causes: • Error in the data memory, data security in the DTCO 1381 is no longer ensured. • The data from the sensor are no longer reliable. • The DTCO 1381 housing was opened without authorisation.	Acknowledge message.
!🔒1 security breach	• The card lock is disturbed or defective. • The DTCO 1381 no longer detects a tachograph card that was previously inserted correctly. • The identity or authenticity of the tachograph card is not proper or the data recorded on the tachograph card is not reliable.	Acknowledge message. If the DTCO 1381 recognises security breaches which do no longer ensure the correctness of the data on the tachograph card, the tachograph card is automatically ejected (even while the vehicle is moving)! Insert tachograph card once again or have it checked if necessary.
!🔌 power interruption	The power was disconnected or the power supplied to the DTCO 1381 / sensor was too low or too high. Under certain conditions this message can also appear when the engine starts!	Acknowledge message. ➥ *Refer to "Power interruption" on page 20.*
!📠 sensor fault	The communication with the sensor is interrupted.	Acknowledge message.

⇨⇨

Picto / reason	*Meaning*	*Measure*
!◘ driving without card	Driving commenced without a driver card or without a valid driver card in card slot 1. The message also appears if a non-permissible card combination is caused by inserting the card while the vehicle is moving. ➥ *Refer to "Operating modes of the DTCO 1381" on page 75.*	Acknowledge message. Stop vehicle and insert valid driver card.
!◘◘1 insertion while driving	The driver card was inserted after driving has begun.	Acknowledge message.
!◘◘1 time overlap	The set UTC time of this tachograph is behind the UTC time of the previous tachograph. This produces a negative time difference.	Acknowledge message. Determine the tachograph with the incorrect UTC time and make sure that an authorised workshop checks and corrects the tachograph as soon as possible.
!◘1 card not valid	The tachograph card has either expired, is not yet valid, or the authentication has failed. An inserted driver card which has become invalid after a change of day will be automatically written to and ejected (without request) after the vehicle becomes stationary.	Acknowledge message. Check tachograph card and insert it again.
!◘◘ cards conflict	The two tachograph cards must not be inserted together in the DTCO 1381! For example, the company card is inserted together with a control card.	Acknowledge message. Remove the corresponding tachograph card from the card slot.
!◘A1 card not closed	The driver card was not properly removed from the last tachograph. In some cases driver-based data will not be saved.	Acknowledge message.
>> overspeed	The set maximum speed was exceeded for longer than 60 seconds.	Acknowledge message. Reduce speed.

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■ Overview of the faults

⚠ **If a fault repeats on a continuous basis, please contact an authorised workshop.**

Picto / reason	*Meaning*	*Measure*
xA internal fault	Serious fault in the DTCO 1381, the following are possible causes: • Unexpected program faults or processing time faults	Acknowledge message.
	• Button elements blocked or pressed simultaneously for some time.	Check proper function of the button elements.
	• Communication fault with external devices.	Check connecting cables or function of the external devices.
	• Communication fault with the instrument display.	Check connecting cables or function of the instrument display.
	• Fault at pulse output.	Check connecting cables or function of the connected control device.
xA1 internal fault	• Fault in the card mechanics, e.g. card lock is not closed.	Remove tachograph card and insert it again.
xA time fault	UTC time of the DTCO 1381 is not plausible or does not function properly. In order to avoid an inconsistency of data, newly inserted driver / company cards are not accepted!	Acknowledge message.

⇨⇨

Picto / reason	*Meaning*	*Measure*
x printer fault	The printer's supply voltage has failed or the temperature sensor for the printing head is defective.	Acknowledge message. Repeat the process and, if necessary, switch off / on the ignition again.
x display fault	Display fault, possibly no display.	Acknowledge message.
x download fault	Fault while downloading the data to an external device.	Acknowledge message. Repeat the data download once again. Check connecting cables (e.g. loose contact) or external device.
x sensor fault	The sensor has indicated an internal fault after a self-test.	Acknowledge message.
x1 card fault x2 card fault	A communication fault has appeared while reading / writing the tachograph card, e.g. by dirty contacts. It might not be possible to record the data completely on the driver card!	Acknowledge message. Clean the contacts of the tachograph card and insert it again. ➥ *Refer to “Disposal of the components” on page 83.*

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■ Working time warnings

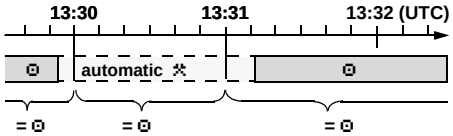
Picto / reason	*Meaning*	*Measure*
1o1 break! 1o04h15 ▮00h15	This message appears after an uninterrupted driving time of 4 hours 15 minutes.	Acknowledge message. Please plan a rest break soon.
1o1 break! 1o04h30 ▮00h15	Driving time exceeded! This message appears after an uninterrupted driving time of 4 hours 30 minutes.	Acknowledge message. Please take a rest break.

Please note!
The DTCO 1381 calculates on the basis of the actually determined driving times and warns the driver if he will exceed the driving time (before a statutory break)!
However, these cumulative driving times do not anticipate the legal interpretation of "continuous driving time".

Saving during stop-and-start operation

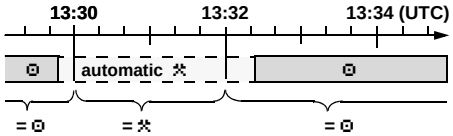
The DTCO 1381 saves all activities to the full minute on a retrospective basis, see examples 1 and 2.

Example 1



Stops under two minutes are stored by the DTCO 1381 as driving time "⊙".

Example 2



Stops being longer than two minutes are stored by the DTCO 1381 as working time "⚒".

■ Overview of the operational notes

Picto / reason	*Meaning*	*Measure*
v-impulses w/o ignition	The DTCO 1381 recognises speed pulses without having switched on the ignition.	Press the button OK.
please enter	This request will appear if no entry is made during the manual entry procedure.	Press button OK and continue the entry.
printout not possible	A printout is not possible at the moment: • because the ignition has been switched off (ADR variant *). • because the temperature of the thermal printing head is too high, • the printer interface is occupied by another active process, e.g. a printout in progress, • or because the supply voltage is too high or too low.	You can request a printout as soon as the problem is removed.
	• No display is possible at the moment since the ignition has been switched off (ADR variant *).	Switch on ignition and call the desired display again.
printout delayed	An ongoing printout is interrupted or delayed because the temperature of the thermal printing head is too high.	Wait to cool. The printout will continue automatically as soon as the permissible condition has been reached.
drawer open	When a printout is requested or a printout is in progress, the DTCO 1381 recognises that the printer drawer is open. The print request will be rejected and/or a printout in progress will be interrupted.	Close the drawer. Restart print request.
	This message also appears if you request the tachograph card from card slot 2 while the printer drawer is open.	Close printer drawer and request tachograph card again. ⇨⇨

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Picto / reason	*Meaning*	*Measure*
no paper	The printer has no paper. The print request will be rejected and/ or a printout in progress will be interrupted.	If a new roll of paper is inserted within one hour, the DTCO 1381 automatically continues the printout.
ejection not possible	Requesting the tachograph card will be rejected: • because data might be read in or transferred, • the driver card needs to be read-in again within the registration time of one minute, • a day change (according to UTC time) is taking place, • the vehicle is moving, • or, in the ADR variant *, the ignition has been switched off.	Wait until the DTCO 1381 enables the function or remove the problem: Stop the vehicle or switch on the ignition. Then request the tachograph card again.
recordings inconsistent	There is an inconsistency in the order of the dates in the data recorded on the driver card.	This message can be displayed until the incorrect recordings have been overwritten by new data! Have the tachograph card checked if the message is displayed permanently.
card error	An error has occurred when processing the inserted tachograph card. The tachograph card is not accepted and is ejected.	Clean the contacts of the tachograph card and insert it again. If this message is displayed again, check whether another tachograph card can be read in correctly.
wrong card type	The inserted card is not a tachograph card. The tachograph card is not accepted and is ejected.	Please insert a valid tachograph card.
internal fault	Fault in the card mechanics, e.g. card lock is not closed.	Remove tachograph card and insert it again.

⇨⇨

Picto / reason	*Meaning*	*Measure*
↯A internal fault	• Fault at pulse output.	Check connecting cables or function of the connected control device.
	• The DTCO 1381 has a serious fault or a serious time error has occurred. For example, an unrealistic UTC time. The tachograph card is not accepted and is ejected.	Take care that an authorised workshop checks and, if necessary, replaces the tachograph as soon as possible.
continual error ♯xxxxxxxx xxx	If this message is displayed, the DTCO 1381 will no longer function!	Please observe the listed note if the tachograph does not operate properly, ➥ *see page 63.*

Operational notes as information

Picto / Reason	*Meaning*	*Measure*
▪ no data!	The menu function cannot be called up since, in the card slot, ... • no driver card is inserted • or a company card / control card is inserted.	These notes disappear automatically after three seconds. No steps must be taken.
⊛± UTC correct. impossible!	It is not possible to use the menu function: • The UTC time has already been corrected within the last seven days. • You are trying to correct the UTC time between one minute before and one minute after midnight.	
printout started ...	Acknowledgement of the selected function.	
entry stored	Acknowledgement that the DTCO 1381 saved the entry.	

➪➪

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Picto / Reason	*Meaning*	*Measure*
display not possible!	No data can be displayed as long as the printing is in progress.	These notes disappear automatically after three seconds. No steps must be taken.
please wait!	The tachograph card has not yet been read completely. It is not possible to call up menu functions.	
1 expires in days 15	The released tachograph card is, for example, invalid in 15 days! An authorised workshop can program the day as of which the notice should appear.	
calibration in days 18	The next periodical inspection is pending, for example in 18 days. Inspections required due to technical alterations cannot be taken into account! An authorised workshop can program the day as of which the notice should appear. ➥ *For more details, see "Compulsory Tachograph inspections" from page 83.*	

Product description

System components

Operating modes of the DTCO 1381

Tachograph cards

Data on the driver / company card

Data in the data memory

Time management

Care and maintenance

Technical data

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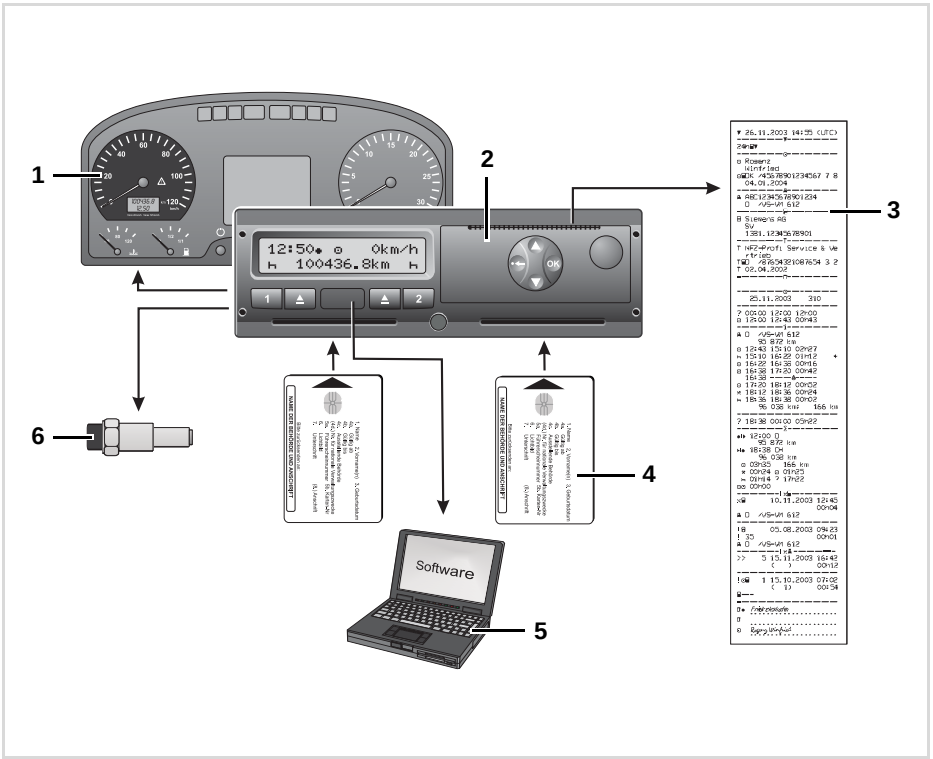
■ System components



(1) Display instrument
If built into the vehicle, the functional monitoring, e.g. symbol " T " will refer to messages on the DTCO 1381.

(2) DTCO 1381
Recording, displaying, and saving of driver-based and vehicle-based data.

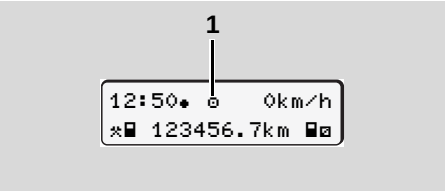
(3) Printouts
➥ *Refer to "Printout examples" on page 91.*

(4) Tachograph cards
➥ *Refer to "Tachograph cards" on page 76.*

(5) Software selection
Software for fleet management and control bodies.

(6) Sensor KITAS 2171
The sensor provides real-time signals and encodes data for recording the distance and speed.

■ Operating modes of the DTCO 1381



The DTCO 1381 has four operating modes:

- Operational "⊙"
- Company "⌂"
- Control "⊡"
- Calibration "T"

According to the inserted tachgraph card(s), the DTCO 1381 automatically changes to the following operating mode:

(1) Display of the operating mode

Operating modes		Card slot -1				
		No card	Driver card	Company card	Control card	Workshop card
Card slot -2	No card	Operational	Operational	Company	Control	Calibration
	Driver card	Operational	Operational	Company	Control	Calibration
	Company card	Company	Company	Company	Operational	Operational
	Control card	Control	Control	Operational	Control	Operational
	Workshop card	Calibration	Calibration	Operational	Operational	Calibration

In this condition, the DTCO 1381 only uses the tachograph card inserted in card slot 1.

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■ Tachograph cards

The authorities in the individual EU member states will issue the tachograph cards specified by the legislature. There are colour-marked tachograph cards, arranged according to access rights and areas of activity, for the following groups of users:

▶ Driver card

The driver uses the driver card to identify himself to the DTCO 1381. The driver card is used for normal driving and permits storing of data, displaying, or printing of activities under this identity.

▶ Company card

The company card identifies a company and authorises access to the data of this company. With the company card, the data saved in the data memory of the Vehicle Unit as well as in the inserted driver card can be displayed, printed, and downloaded. It is also possible to download load data remotely with the corresponding fleet management system. This company card is intended for the owners and operators of vehicles.

▶ Control card

The control card identifies an official of a control body (like the police) and permits access to the data in the data memory. All saved data and the data of an inserted driver card are accessible. This data can be displayed, printed, or downloaded through the download interface.

▶ Workshop card

Persons of an authorised workshop who are approved to program, calibrate, activate, test, etc. will receive the workshop card.

▶ Locking the tachograph cards

If the DTCO 1381 accepts an inserted tachograph card, removal of the card will be mechanically blocked. It is possible to remove the tachograph card only when:

- the vehicle is stationary and the ignition is switched on (required only for ADR variant *),
- the user requests removal,
- after the data defined by the regulations has been saved on the tachograph card.

Automatic ejection
If the DTCO 1381 recognises a fault in the card lock, it tries to transfer the existing data to the tachograph card before it is automatically ejected. In this case, the completeness and authenticity of the data on the tachograph card can no longer be guaranteed!

► Access rights of the tachograph cards

The rights to access data saved in the data memory of the DTCO 1381 are regulated by law and will be released with the corresponding tachograph card only.

		Without card	Driver card	Company card	Control card	Workshop card
Print	**Driver data**	X	V	V	V	V
	Vehicle data	T1	T2	T3	V	V
	Parameter data	V	V	V	V	V
Displays	**Driver data**	X	V	V	V	V
	Vehicle data	T1	T2	T3	V	V
	Parameter data	V	V	V	V	V
Read out	**Driver data**	X	X	V	V	V
	Vehicle data	X	X	T3	V	V
	Parameter data	X	X	V	V	V

Driver data	=	Data on the driver card
Vehicle data	=	Data in the data memory
Parameter data	=	Data for device adaptation / Calibration

V	=	Unlimited access rights
T1	=	Driver activities of the last eight days without driver identification data
T2	=	Driver identification only for the inserted card
T3	=	The associated company's driver activities
X	=	not possible

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■ Data on the driver / company card

▶ Fixed data on the driver card

Additional to the general data and security data, the following data for identifying the driver are saved once on the driver card:

- Driver card identification
  - Card number, issuing member state, issuing authority,
  - Date of issue, validity period, etc.
- Cardholder identification
  - Name, date of birth, preferred language, etc.
- Information on the driving licence.

▶ Variable data on the driver card

After any use of the vehicle, the DTCO 1381 updates the following data on the driver card.

Vehicles used

- First insertion / final removal during a period of use
- Odometer reading at the beginning and end of the usage
- Vehicle ID

The driver's activities

- Date and number of kilometres driven on this day
- any change of status, such as ...
  - Single-driver mode / crew operation,
  - Driver card in card slot 1 / card slot 2,
  - Driver card inserted / not inserted,
  - all set activities
  - and the time of the change.

During normal driving operation, the driver's daily activities are saved on the driver card for at least 28 days.

Country entries

- Date and time of the entry
- Entry at the beginning or end of the shift as well as each country entry via the menu function.
- Country / region entered
- Odometer reading at the time of the entry

Appearing events / faults

Certain events (a maximum of 72) and faults (a maximum of 48) are saved with the beginning and end as well as with a message displayed on the vehicle in which the event occurred.

Information about the controls

- Date and time of the control
- Identification of the control card
- Kind of control carried out
- Period of time from which the data was downloaded.
- Identification of the vehicle in which the control took place.

Special entries

The 56 most recently entered conditions are stored:

- Date and time of the entry
- Type of condition

(Conditions are periods of time where the vehicle is on a ferry, on a train or in the "Out of Scope" status). ⇨⇨

Storage capacity on the driver card
Depending on the card type, the available storage area of the "Variable data" differs in size. The amount of data that can be saved is stored on the respective card.

If the memory capacity is full, the oldest data will be overwritten by the DTCO 1381.

▶ Fixed data on the company card

Additional to the general data and security data, the following data for identifying the company are saved once on the company card:

- Card identification
  - Card number, issuing member state, issuing authority,
  - Date of issue, validity period
- Cardholder identification
  - Name and address of the company

▶ Variable data on the company card

The following data is stored with reference to company activities:

- Date and time of the activity
- Type of activity
  - Lock-in / lock-out
  - Downloading the data from the data memory
  - Downloading the data from the driver card
- Time period (from / to) from which the data was downloaded.
- Vehicle ID
  - Registration number and approval authority of the vehicle from which a data download was executed.
- Card number and issuing member state of the driver card from which the data was downloaded.

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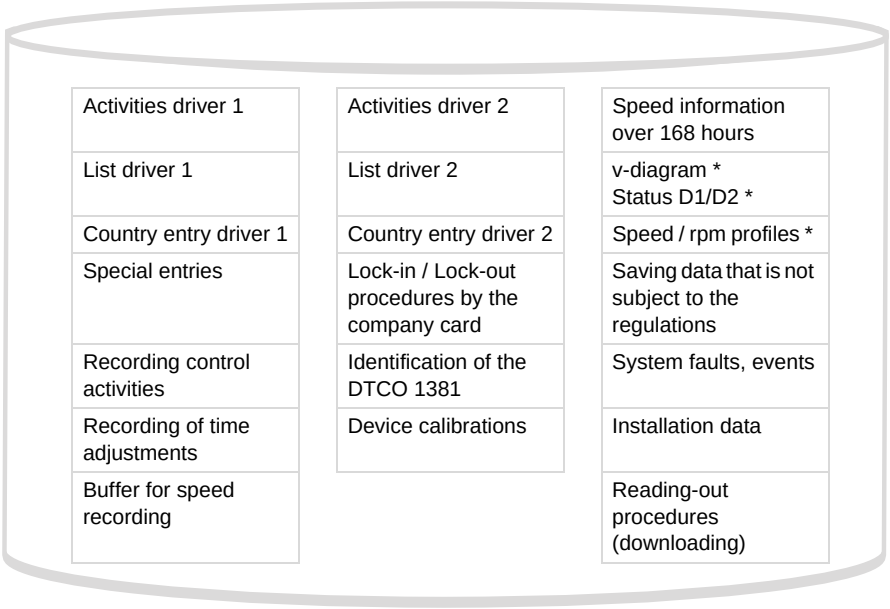
■ Data in the data memory

The data memory records and saves the following data over a time period of at least 365 calendar days:



Data in data memory, schematic diagram

▶ Short explanation about the saved data

Activities driver 1/2
When the vehicle is stationary (no speed signal), the evaluation of activities occurs in 1 minute intervals and the DTCO 1381 will evaluate the longest lasting activity for each interval (up to the point of a speed signal).

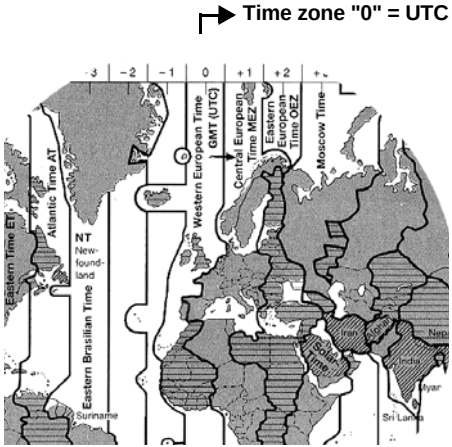
Detailed speed data over 168 h [24 h][1)]
Speed values are saved over a time period of 168 hours of driving time. The DTCO 1381 saves each second of the driven speed exactly with date and time (average of several measurements).

- Resolution of the stored values: 1 km/h
- Maximum speed value: 220 km/h

[1)] These data can only be read via the download interface.

■ Time management

The DTCO 1381 saves all time entries for working time, availability time, driving time, rest time, etc. in UTC time. The entries on the tachograph cards are saved in the same way. Time information on the printouts also reflects the UTC time.



Time zone in Europe

UTC time - what is it?

UTC time = universal time coordinated.

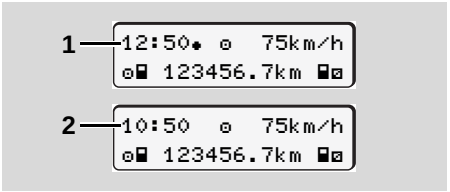
UTC time corresponds to time zone "0" of the 24 time zones (-12 ... 0 ... +12) distributed across the globe.

Time zone offset	*Countries*
00:00 (UTC)	GB / P / IRL / IS
+ 01:00 h	A / B / CZ / CY / D / DK / E / F / H / I / L / M / N / NL / PL / S / SK / SLO
+ 02:00 h	BG / EST / FIN / GR / LT / LV / RO / TR
+ 03:00 h	RUS

▶ Depiction of the time in the display

The time shown in the display is set at the factory to reflect UTC time. Use the "Local time" menu function to adjust the displayed time to the local time.

You can determine which time is currently shown in the standard display as follows:



Depiction of the time in the standard display

(1) Set local time

The symbol "✱" appears after the time.

(2) UTC time

The time appears without the symbol "✱".

⇨⇨

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▶ Converting local time to UTC time

All time information must be entered in UTC so that the DTCO 1381 correctly calculates the time entries.

The following parameters must be taken into consideration:

- The relative time zone offset
- The valid changeover times for the beginning and end of daylight-savings time.

Formula:

UTC time = Local time – (ZO + SO)

ZO = Time zone offset

SO = Daylight-savings time offset
(this offset is not used after daylight-savings time ends)

(ZO + SO) = set offset in the DTCO 1381

Example:

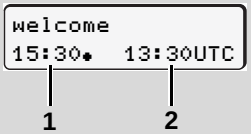
Local time in Germany = 15:30
(daylight-savings time)

UTC time = Local time – (ZO + SO)

= 15:30 –
(01:00 h + 01:00 h)

UTC time = 13:30 Time

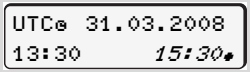
Recognising the set offset



Greeting text

After a tachograph card is inserted, the set local time **(1)** and the UTC time **(2)** will appear for about three seconds. The difference between local time and UTC time corresponds to the set offset of the DTCO 1381.

Or:



Menu function "Local time"

In the "Local time" menu function, you can see and alter the set offset of the DTCO 1381.

➥ *Refer to “Set Local time” on page 57.*

■ Care and maintenance

► Cleaning the DTCO 1381

Clean the casing, the display and the function keys with a slightly moistened cloth or with a microfibre cleaning cloth.

⚠ Do not use any abrasive cleaning agents or solvents like thinner or petroleum spirits.

► Compulsory Tachograph inspections

Preventive maintenance work is not required for the DTCO 1381. At least every two years, the proper operation of the DTCO 1381 must be checked by an authorised workshop.

Follow-up inspections are necessary if

- changes were made to the vehicle, e.g. concerning the distance pulse or the wheel circumference,
- a repair was made to the DTCO 1381,
- the official registration number of the vehicle has been changed,
- the UTC time deviates by more than 20 minutes.

⚠ Make sure that the calibration plaque is renewed during every 2 year inspection and contains the required data.

Make sure that the supply voltage of the DTCO 1381 is not disconnected for more than 12 months at a time, for example due to disconnection of the battery from the vehicle.

► Behaviour when repairing / replacing the DTCO 1381

The authorised workshops can download the data from the DTCO 1381 and hand them over to the company.

If, due to a failure, the saved data cannot be downloaded, the workshops are instructed to document this with a certificate and to contact the company in writing.

⚠ Archive the data or carefully keep the documentation for possible requests by control bodies.

► Disposal of the components

☞ Please dispose of the DTCO 1381 with its associated system components in compliance with the guidelines for disposing EC recording equipment effective in the respective member states.

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■ Technical data

► DTCO 1381

Measurement range end value	220 km/h	
LCD	2 lines with 16 characters each	
Temperature	Operation: Storage:	-25 to 70 °C -40 to 85 °C
Voltage	24 or 12 Volt DC	
Power supply	Standby: 30 mA (12 V) 20 mA (24 V)	Typical during operat.: max. 3,0 A (12 V) max. 1,0 A (24 V)
EMV / EMC	DIR 2006/28/EC	
Thermal printing mechanism	Character size: Print width: Speed:	2,1 x 1,5 mm 24 characters/line approx. 15-30 mm/sec.
Protection type	IP 54	

► Paper roll

Ambient conditions	Temperature:	-25 to 70 °C
Dimensions	Diameter: Width: Length:	approx. 27.5 mm 56,5 mm approx. 8 m
Order no.:	1381.90030300 You will receive original spare paper rolls from your local VDO distributor.	

☞ **Please note!**

Use (order) only paper rolls (original VDO printer paper) on which is visible the tachograph model (DTCO 1381) with approval mark "e1 84" and the valid approval mark "e1 174" or "e1 189".

Possible special equipment	• ADR variant • Customer-specific panel, illumination of display and buttons • Automatic setting of the activities after ignition on/off • Printout of diagrams (activites, speed, status input), v- / n-profiles

8

Pictograms and printout samples

Overview of the pictograms

Country symbols

Printout examples

Explanation of printout examples

Data record purpose during events or faults

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■ Overview of the pictograms

Operating modes	
	Company
	Control
	Operational
	Calibration
	Production status

Persons	
	Company
	Controller
	Driver
	Workshop / inspection centre
	Manufacturer

Activities	
	Availability time
	Driving time
	Break and rest time
	Other working time
	Valid interruption / break
?	Unknown

Devices / functions	
1	Card slot 1; Driver 1
2	Card slot 2; Driver 2
	Tachograph card
	Clock
	Printer / printout
	Entry
	Display
	External saving Download data (copy)
	Data transmission running
	Sensor
	Vehicle / Vehicle unit / DTCO 1381
	Tyre size
	Power supply

Miscellaneous	
!	Event
	Fault
	Operational note / Work time warnings
	Shift beginning (Start of work day)
	Location
	Security
	Speed
	Time
	Total / summary
	Shift end (End of work day)
M	Manual entry of driver activities

Specific conditions	
OUT	Recording equipment not required
	Vehicle located on a ferry or on a train

Qualifiers	
24h	Daily
II	Two weeks
+	From or to

➪➪

▶ Pictogram combinations

Miscellaneous	
	Control location
	Start time
	End time
OUT	Begin Out of Scope: Recording equipment not required
OUT	End Out of Scope
	Location at beginning of work day (shift beginning)
	Location at end of work day (shift end)
	From vehicle
	Printout driver card
	Printout vehicle / DTCO 1381
	Entry vehicle / DTCO 1381
	Display driver card
	Display vehicle / DTCO 1381
	Local time
	UTC correction

Cards	
	Driver card
	Company card
	Control card
	Workshop card
	No card

Driving	
	Crew
	Driving time for two weeks

Printouts	
24h	Daily driver activities (daily value) from the driver card
!×	Events and faults from the driver card
24h	Daily driver activities (daily value) from DTCO 1381
!×	Events and faults from DTCO 1381
>>	Over-speeding
	Technical data
	Driver's activities *
v	v-diagram *
D	Status D1/D2 diagram *
%v	Speed profiles *
%n	Rpm profiles *

Displays	
24h	Daily driver activities (daily value) from the driver card
!×	Events and faults from the driver card
24h	Daily driver activities (daily value) from vehicle / DTCO 1381
!×	Events and faults from vehicle / DTCO 1381
>>	Over-speeding
	Technical data
	Company

9

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Events	
!	Insertion of an invalid tachograph card
!	Time overlap
!	Insertion of driver card while driving
>>	Over-speeding
!	Communication fault with the sensor
!	Time adjustment (by workshop)
!	Cards conflict
!	Driving without valid driver card
!	Last card process not completed correctly
!	Interruption of power supply
!	Security breach
>	Over-speeding control

Faults	
×	Card fault
×	Display fault
×	Printer fault
×	Internal fault DTCO 1381
×	Download fault
×	Sensor fault

Work time warnings	
	break!

Manual entry process	
?	Shift end?
?	Acknowledgement or entry of the "location" at the end of the shift
?	Beginning of the new shift
?	Entering "location" at the beginning of the shift

Operational notes	
	Wrong entry
	Menu access not possible
	Please enter
	Printout not possible
	Drawer open
	No paper
	Printout delayed
	Card defective
	Incorrect card
	Ejection not possible
	Process delayed
?	Recording inconsistent
	Internal fault
	v-impulses without ignition
1	Expires in days ...
	Calibration in days ...

■ Country symbols

Value assignment	
A	Austria
AL	Albania
AND	Andorra
ARM	Armenia
AZ	Azerbaijan
B	Belgium
BG	Bulgaria
BIH	Bosnia and Herzegovina
BY	Belarus
CH	Switzerland
CY	Cyprus
CZ	The Czech Republic
D	Germany
DK	Denmark
E	Spain ([1]
EC	European Community
EST	Estonia
EUR	Rest of Europe
F	France
FIN	Finland
FL	Liechtenstein
FR	Faroes
GE	Georgia
GR	Greece
H	Hungary
HR	Croatia
I	Italy
IRL	Ireland
IS	Iceland
KZ	Kazachstan
L	Luxembourg
LT	Lithuania
LV	Latvia
M	Malta
MC	Monaco
MD	Republic of Moldavia
MK	Macedonia
N	Norway
NL	The Netherlands
P	Portugal
PL	Poland
RO	Romania
RSM	San Marino
RUS	The Russian Federation
S	Sweden
SK	Slovakia
SLO	Slovania
TM	Turkmenistan
TR	Turkey
UA	Ukraine
UK	United Kingdom, Alderney, Guernsey, Jersey, Isle of Man, Gibraltar
UNK	Unknown
V	Vatican City
WLD	Rest of the world
YU	Yugoslavia

([1] ➥ *Refer to “Symbols of the regions” on page 90.*

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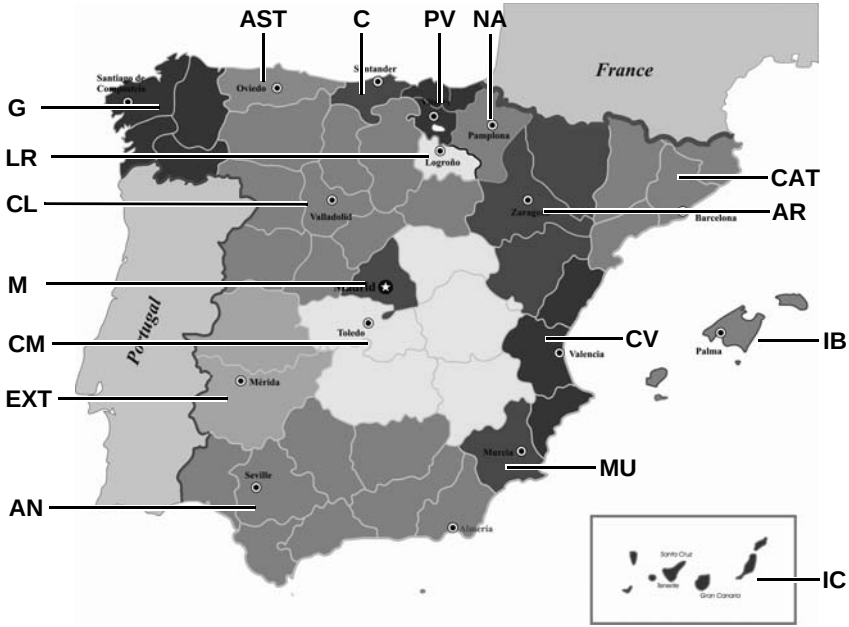
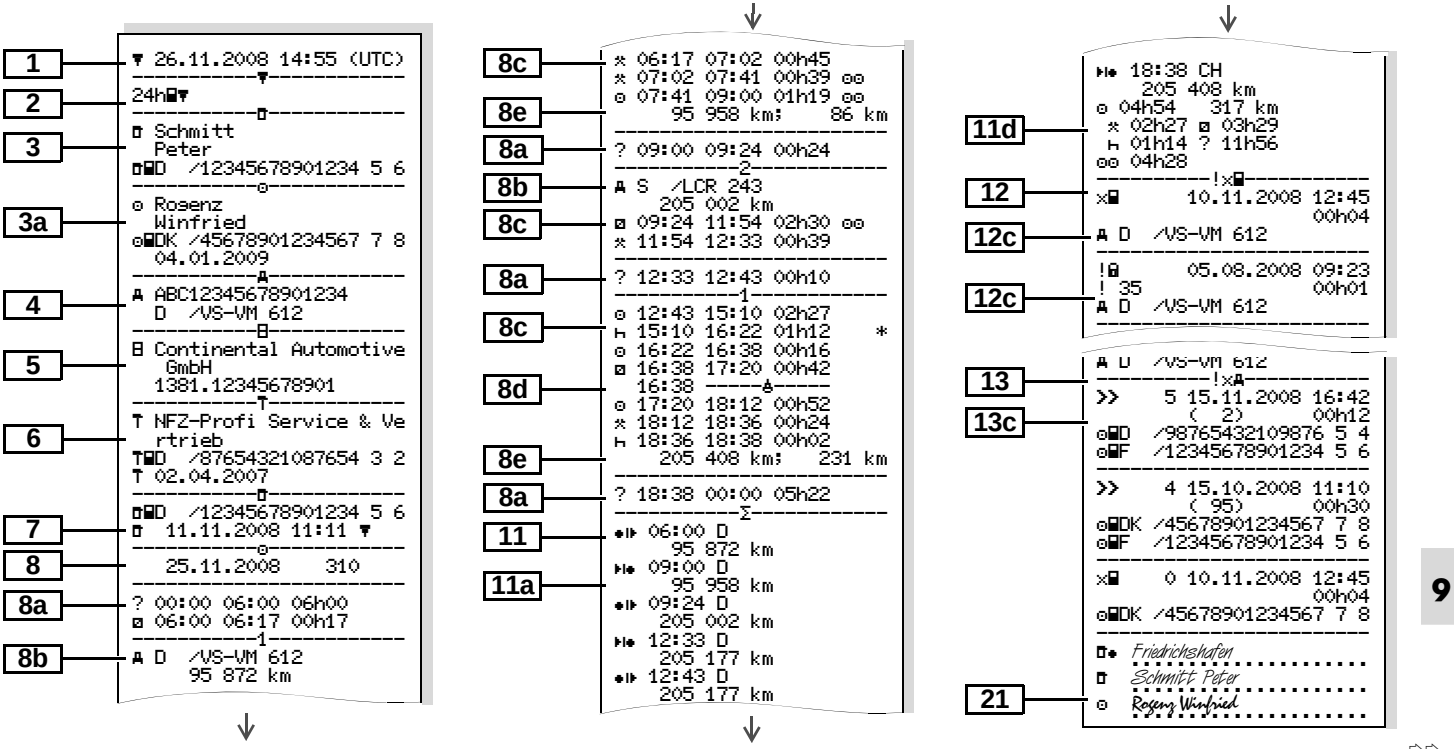
▶ Symbols of the regions

Value assignment - Spain	
AN	Andalusia
AR	Aragon
AST	Asturias
C	Cantabria
CAT	Catalonia
CL	Castile-León
CM	Castile-La Mancha
CV	Valencia
EXT	Extremadura
G	Galicia
IB	Balearic islands
IC	Canary islands
LR	La Rioja
M	Madrid
MU	Murcia
NA	Navarra
PV	Basque Community



■ Printout examples

► Daily printout of the driver card



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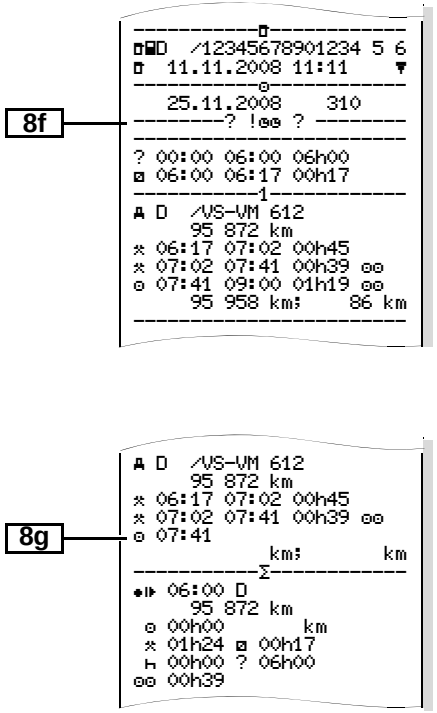
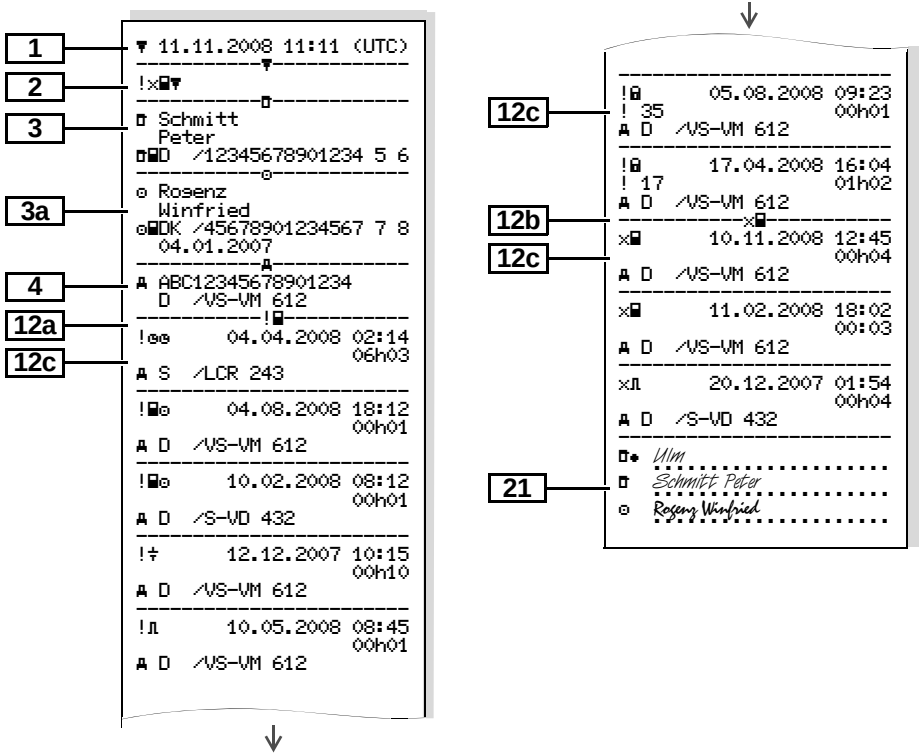
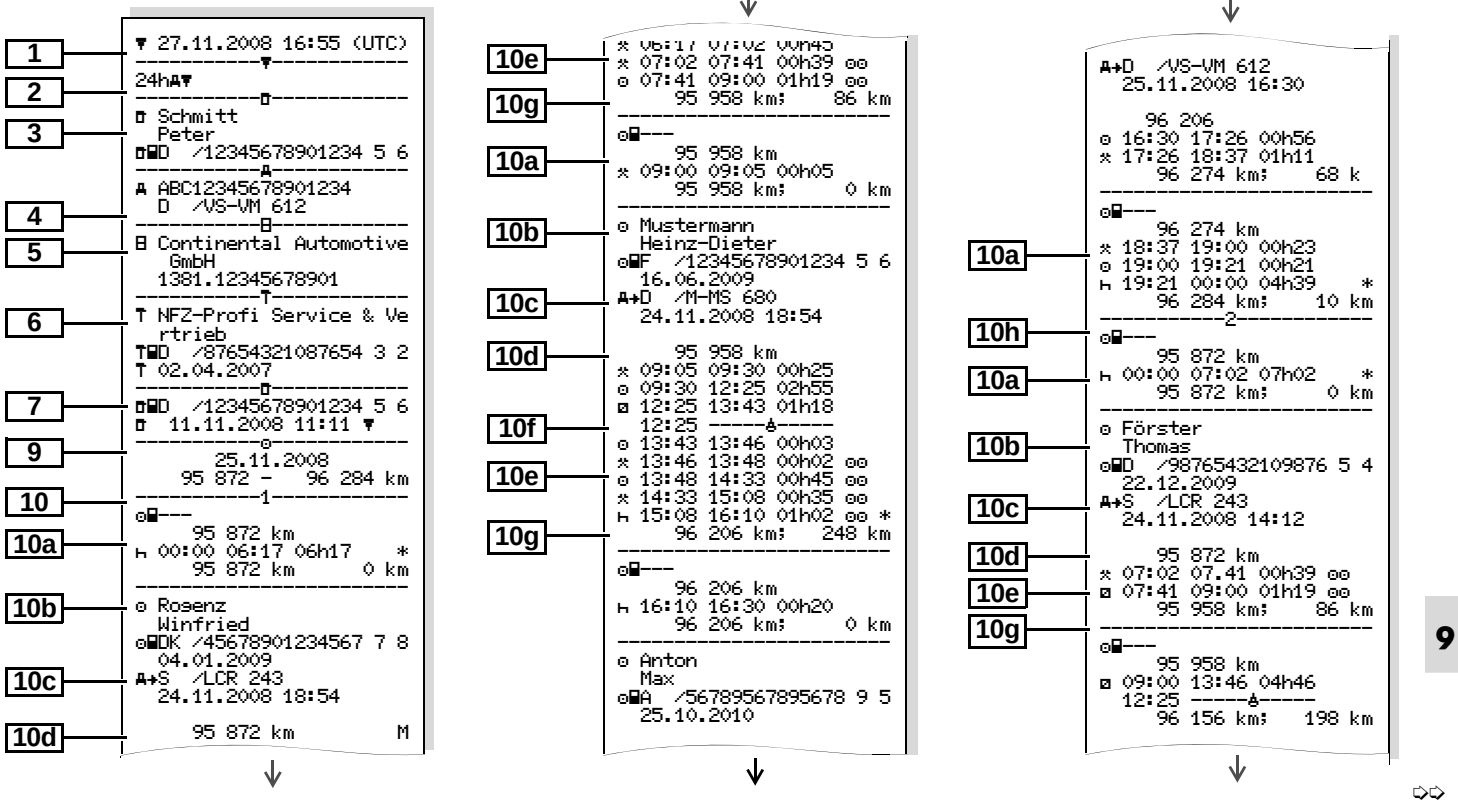
Points to note with "Daily printout of the driver card"



▶ Events / faults from the driver card



▶ Daily printout of the vehicle



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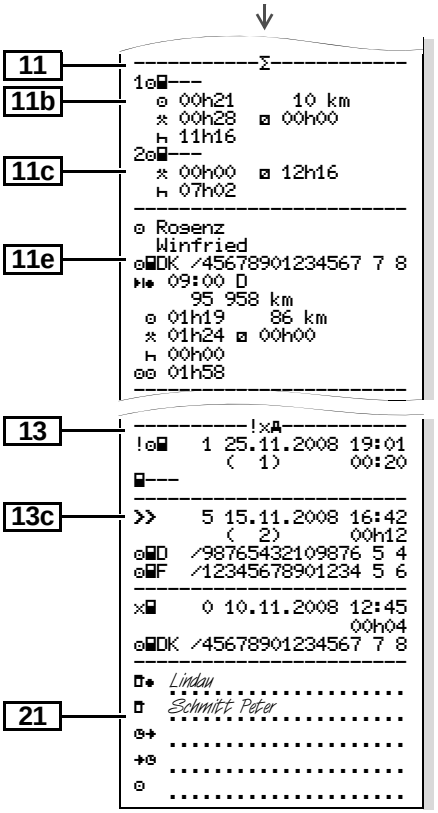
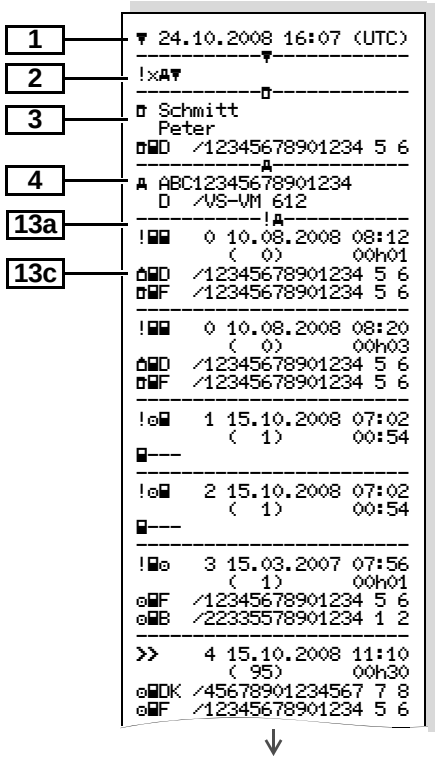
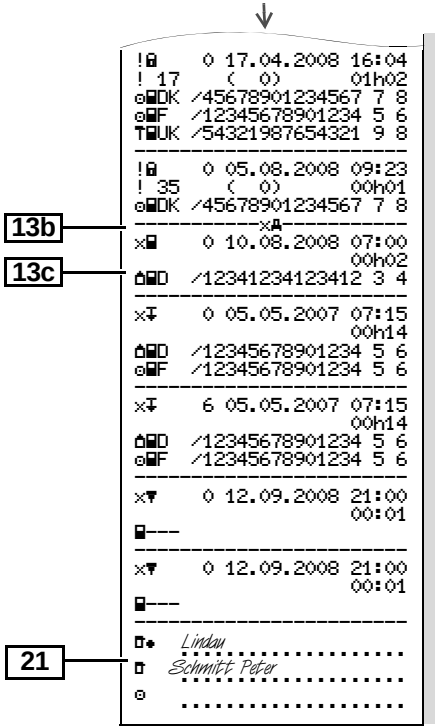
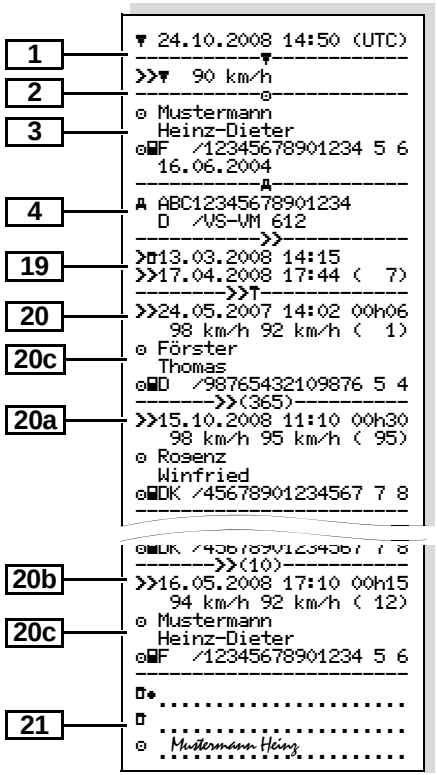


▶ Events / faults from the vehicle

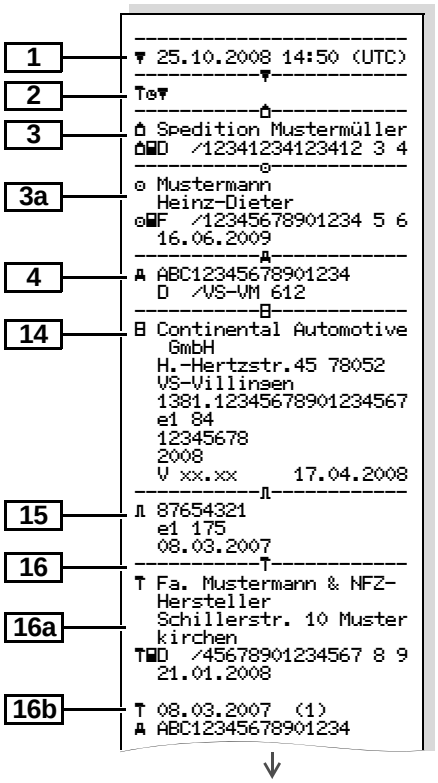


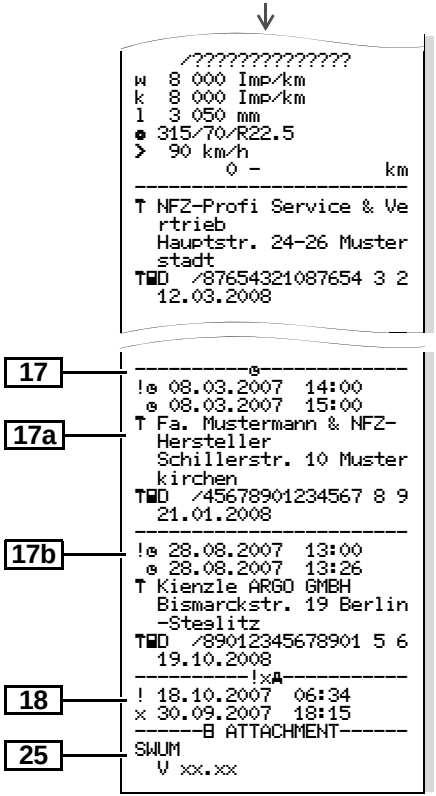


► Over-speeding



► Technical data





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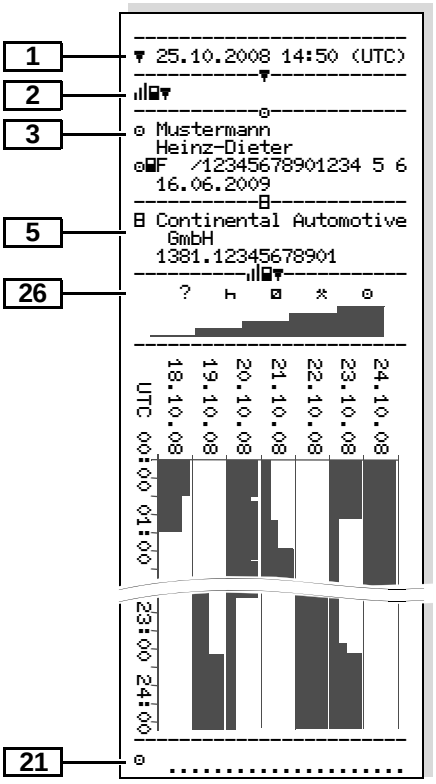
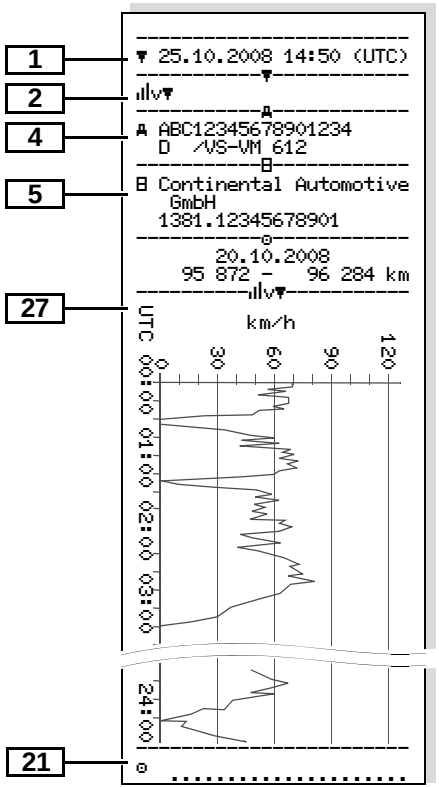
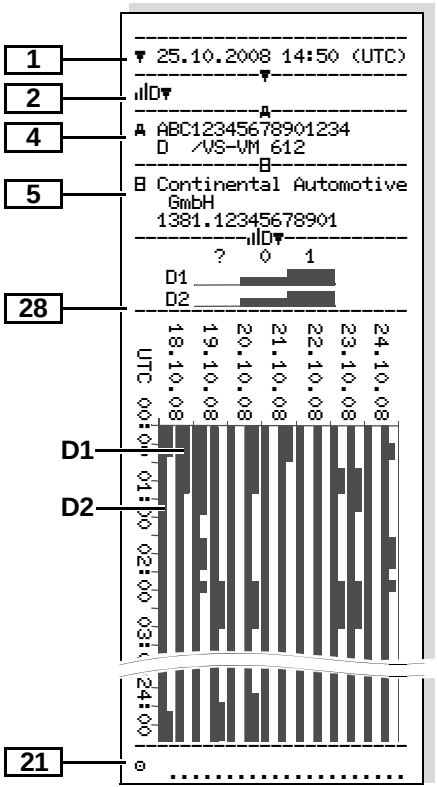
▶ Driver's activities *



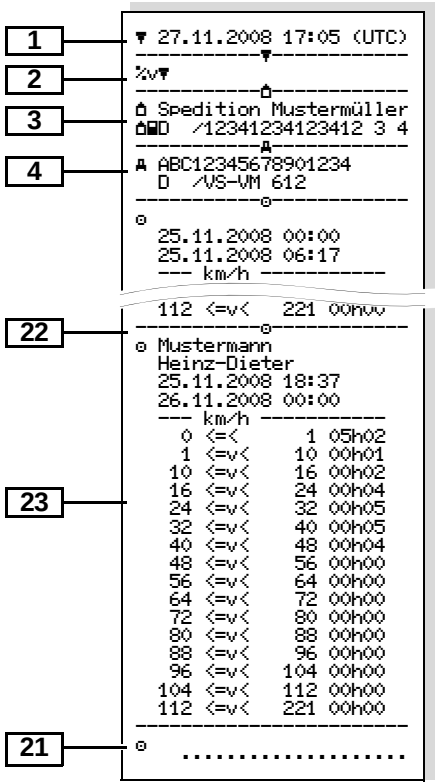
▶ v-diagram *



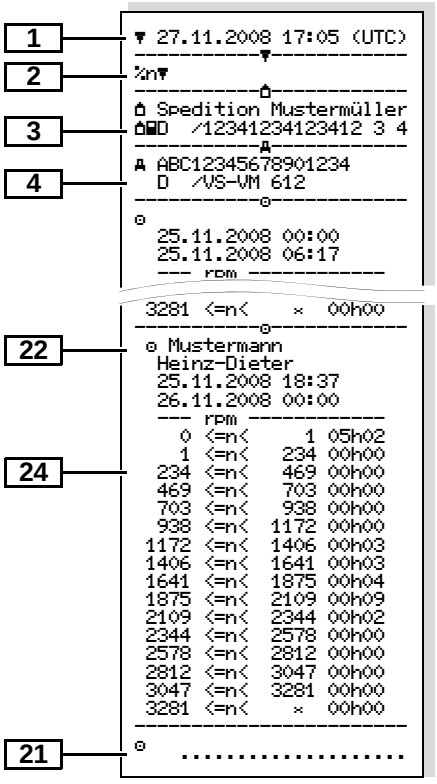
▶ Status D1/D2 diagram *



▶ Speed profiles *



▶ Rpm profiles *



9

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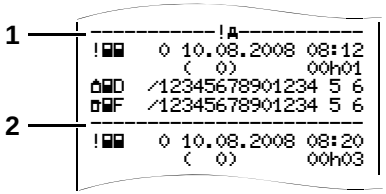
■ Explanations of printout examples

☞ On request, a company-specific logo can be applied to the printout.



Every printout consists of a string of different data blocks that are identified by block identifiers **(1)**.

A data block contains one or several data records that are identified by means of a data record identifier **(2)**.

A data record identifier will not be printed immediately after a block identifier!

▶ Legend of the data blocks

1	Date and time of the printout in UTC time
2	Type of printout: 24h = Daily printout of the driver card !× = Events / faults from the driver card 24h = Daily printout from the DTCO 1381 !× = Events / faults from the DTCO 1381 >> = Over-speeding The value set in the speed limiter will also be printed. T = Technical data Optional printouts: = Driver's activities * = v-diagram * = Status D1/D2 diagram * = Speed profiles * = Rpm profiles *
3	Information about the cardholder of the inserted tachograph card: = Controller = Driver = Company = Workshop / inspection centre • Last name of official (or the authority) • First name of official • Card identification If tachograph cards are not associated with a person, the name of the control body, the company, or the workshop will be printed instead of the person's name.
3a	Information about the cardholder of the other tachograph card: • Last name of driver • First name of driver • Card identification • Card valid until ...
4	Vehicle identification: • Vehicle identification number • Authorising member state and vehicle registration number ⇨⇨

5	Identification of the DTCO 1381: • Tachograph manufacturer • Part number of the DTCO 1381 tachograph
6	Most recent calibration of the DTCO 1381: • Name of workshop • Workshop identification • Date of calibration
7	Most recent control: • Control card identification • Date, time, and type of control ▮ = Downloading from the driver card ↧ = Downloading from the DTCO 1381 ▬ = Printing □ = Displaying
8	List of all driver activities in the order they appear: • Calendar day of the printout and the usage counter (number of days that the card was used.)
8a	• ? = Time period that the card was not inserted • Beginning, end, and duration • For example: manually entered activity after insertion of the driver card, with pictogram, beginning, end, and duration
8b	Insertion of driver card into slot (card slot 1 or card slot 2): • Authorising member state and vehicle registration number • Odometer reading when card inserted
8c	Activities of the driver card: • Beginning, end, duration, and driving status ⚮ = Crew operation, * = Rest periods of at least one hour
8d	Specific conditions: • Time of entry and pictogram, for example: ferry or train
8e	Withdrawal of driver card: • Odometer reading and distance travelled since most recent insertion
8f	**Attention:** Possible inconsistency in the data recording since this day was saved twice on the tachograph card.
8g	Activtiy not completed: • Duration of activity and daily summaries might be given incompletely when printouts are made while the driver card is inserted.
9	Beginning of list of all driver activities in the DTCO 1381: • Calendar day of printout (date of inquiry) • Odometer readings at the times 00:00 and 23:59
10	Chronology of all activities from card slot 1
10a	Time period in which no driver card was inserted in card slot 1: • Odometer reading at the beginning of the time period • Set activity or activities in this time period • Odometer reading at the end of the time period and distance traveled

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10b	Insertion of the driver card: • Last name of driver • First name of driver • Card identification • Card valid until ...
10c	• Authorising member state and official registration number of the previous vehicle • Date and time card was removed from the previous vehicle
10d	• Odometer reading when driver card inserted M = the entry was done manually
10e	List of activities: • Pictogram of the activity, beginning and end times, duration, and driving status ⚙⚙ = Crew operation * = Rest periods greater than 1 h
10f	Entry of specific conditions: • Start and end times and pictogram of the condition ⛴ = Transfer by ferry or train OUT = Recording equipment not required
10g	Withdrawal of driver card: • Odometer reading and distance travelled
10h	Chronology of all activities from card slot 2
11	Daily summary
11a	Entered locations: • ⏯ = Beginning time with country and region (if applicable) • ⏯ = Ending time with country and possibly region • Vehicle odometer reading
11b	Summary of times with no driver card in card slot 1: • Entered locations in chronological order (no entry in example) • Total activities from card slot 1
11c	Summary of times with "no driver card" in card slot 2: • Entered locations in chronological order (no entry in example) • Total activities from card slot 2
11d	Daily summary "Total values of activities" from the driver card: • Total driving time and distance travelled • Total work and availability time • Total rest time and unknown time • Total time in crew activities
11e	Summary of the activities, chronologically arranged by driver (cumulative for each driver for both card slots): • Last name, first name, card identification of the driver • ⏯ = Beginning time with country and region (if applicable) ⏯ = Ending time with country and possibly region • Activities from this driver with: Total driving time and distance travelled, total work and total availability time, total rest time, total time in crew activities

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	Note: In this sample printout, the driver Anton Max is initially active as driver 2, then as driver 1. The sum of the activities is derived from both card slots.
12	List of the five most recent saved events or faults on the driver card.
12a	List of all saved events on the driver card, arranged according to type of fault and date.
12b	List of all saved faults on the driver card, arranged according to type of fault and date.
12c	Data record of the event or fault. *Line 1:* • Pictogram of the event or fault • Date and beginning *Line 2:* • Events subject to security breach are broken down with an additional code. ➥ *Refer to "Data record purpose during events or faults" on page 105.* • Duration of the event or fault
	Line 3: • Authorising member state and official registration number of the vehicle in which the events or faults appeared.
13	List of the five most recent saved or still active events / faults in the DTCO 1381.
13a	List of all recorded or continuing events of the DTCO 1381.
13b	List of all recorded or continuing faults of the DTCO 1381.
13c	Data record of the event or fault. *Line 1:* • Pictogram of the event or fault • Coding of data record purpose. ➥ *Refer to "Data record purpose during events or faults" on page 105.* • Date and beginning *Line 2:* • Events subject to security breach are broken down with an additional code. ➥ *Refer to "Coding for more detailed description" on page 107.*
	• Number of similar events on this day. ➥ *Refer to "Number of similar events" on page 106.* • Duration of the event or fault *Line 3:* • Identification of the driver card(s) (maximum of four entries) that was inserted at the beginning or at the end of the event or fault. • "🖬−−−" appears when no driver card is inserted.
14	Identification of the DTCO 1381: • Tachograph manufacturer • Address of the tachograph manufacturer • Part number • Type approval number • Series number • Year of manufacture • Version and date of installation of the user software

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15	Identification of the sensor: • Series number • Type approval number • Date of initial installation (first pairing with a DTCO 1381)
16	Calibration data
16a	Listing of the calibration data (in data records): • Name and address of the workshop • Workshop identification • Workshop card valid until ...
16b	• Date and purpose of the calibration: 1 = Activation; Recording of known calibration data at the time of activation 2 = Initial installation; first calibration data after activation of the DTCO 1381 3 = Installation after repair - replacement unit; first calibration data in current vehicle 4 = Periodic inspection; calibration data of a periodic inspection
	• Vehicle identification number • Authorising member state and official registration number • **Note:** In the example, this data is available only in the next data record. • w = Characteristic coefficient of the vehicle • k = Set constant in the DTCO 1381 for the speed adjustment • l = Actual circumference of tyre • = Tyre size • = Speed limiter setting • Old and new odometer reading
17	Time settings
17a	Listing of all available data about time setting: (in data records) • Date and time, old • Date and time, changed • Name of workshop that set the time • Address of workshop • Workshop identification
	• Workshop card valid until ... **Note:** In the second data record it can be seen that the UTC time was corrected by an authorised workshop.
18	The most recently recorded event and the current fault: • ! = Most recent event, date, and time • = Most recent fault, date, and time
19	Information on "over-speeding" control: • Date and time of the most recent control • Date and time of the first instance of over-speeding since the most recent control and the number of subsequent over-speeding instances.
20	First instance of over-speeding since the most recent calibration.
20a	The five most severe instances of over-speeding of the last 365 days.

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20b	The 10 most recently recorded instances of over-speeding. For each day the most severe instance of over-speeding is recorded.
20c	Entries during instances of over-speeding (chronologically arranged by highest average speed): • Date, time, and duration of over-speeding • Highest and average speed of the over-speeding instance, number of similar events on this day • Last name of driver • First name of driver • Card identification of the driver **Note:** If no data record for an instance of over-speeding appears in a block, then the following appears: "➔➔–––".
21	Handwritten information: • = Location of control • = Signature of the controller
	• = Start time • = End time • = Signature of the driver
22	Information about the cardholder of the recorded profile: • Last name of driver • First name of driver • Card identification **Note:** Missing information about the cardholder means: no driver card inserted in card slot 1. • Beginning of the profile recording with date and time • End of the profile recording with date and time New profiles are created: • by inserting / withdrawing a tachograph card into / from card slot 1 • by a day change • by a correction of the UTC time • by a voltage interruption
23	Recording of speed profiles: • List of the defined speed ranges and period in this range • Range: 0 <=v< 1 = Vehicle stationary The speed profile is divided into 16 zones. During installation, the individual ranges can be adjusted individually.
24	Recording of rpm profiles: • List of the defined motor rpm ranges and period in this range • Range: 0 <=n< 1 = Engine off • Range: 3281 <=n< x = unlimited The rpm profile is divided into 16 zones. During installation, the individual ranges can be adjusted individually.
25	Manufacturer-specific data: • Version number of the software upgrade module (SWUM)

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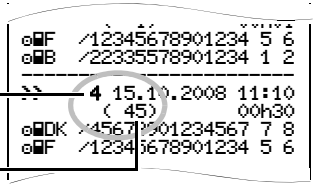
26	Recording of the activities: • Legend of the symbols • From the selected day on, there are profiles of the activities of the last 7 calendar days.
27	Recording of the speed data on the selected day.
28	Recording of additional statuses, such as the use of blue lights and sirens on emergency vehicles, etc.: • Legend of the symbols • From the selected day on, there are profiles of status inputs D1/D2 of the last 7 calendar days.

■ Data record purpose during events or faults

For each established event or each established fault, the DTCO 1381 will register and save the data according to the specified rules.



(1) Data record purpose
(2) Number of similar events on this day

The data record purpose **(1)** indicates why the event or fault was recorded. Events of the same type appearing several times on this day are displayed at pos. **(2)**.

▶ Coding of data record purpose

The following overview shows the events and faults arranged according to error type (cause) and the assignment of the data record purpose:

Events		
Picto / reason		*Purpose*
!	Cards conflict	0
!	Driving without valid card	1 / 2 / 7
!	Insertion while driving	3
!	Card not closed	0
>>	Over-speeding	4 / 5 / 6
!	Power interruption	1 / 2 / 7
!	Sensor fault	1 / 2 / 7
!	Security breach	0
!	Time overlap ([1	–
!	Card invalid ([2	–

Faults		
Picto / reason		*Purpose*
×	Card fault	0
×	Internal fault	0 / 6
×	Printer fault	0 / 6
×	Display fault	0 / 6
×	Download fault	0 / 6
×	Sensor fault	0 / 6

([1 This event will be saved only on the driver card.

([2 The DTCO 1381 will not save this event.

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Overview Data record purpose

0 = One of the 10 most recent (or last) events or faults.

1 = The longest event for one of the last 10 days of occurrence.

2 = One of the 5 longest events over the last 365 days.

3 = The last event for one of the last 10 days of occurrence.

4 = The most serious event for one of the last 10 days of occurrence.

5 = One of the 5 most serious events over the last 365 days.

6 = The first event or fault having occurred after the last calibration.

7 = An active / on-going event or fault.

Number of similar events

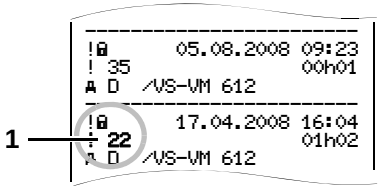
0 = For this event, it is not necessary to save "Number of similar events".

1 = One event of this type appeared on this day.

2 = Two events of this type appeared on this day, but only one was saved.

n = "n" events of this type appeared on this day, but only one was saved.

▶ Coding for more detailed description



Events subject to security breach "!🔒" are broken down with an additional coding **(1)**.

Security Breach Codes relating to the DTCO 1381

16 = No additional information

17 = Failed authentication of the sensor

18 = Authentication errors of the driver card

19 = Unauthorised changes to the sensor

20 = Integrity error, the authenticity of the data on the driver card is not assured.

21 = Integrity error, the authenticity of the saved user data is not assured.

22 = Internal data transmission error

23 = Unauthorised opening of the casing

24 = Manipulation of the hardware

Security Breach Codes relating to the KITAS 2171 impulse sensor

32 = No additional information

33 = Failed authentication

34 = Integrity error, the authenticity of the memory data is not assured.

35 = Internal data transmission error

36 = Unauthorized opening of the casing

37 = Manipulation of the hardware

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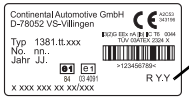
■ Release overview

This operating manual replaces previous certified operating manuals and is valid for the following DTCO 1381 device versions:

Release version (can be seen on the model plate)	**Certified operating instructions**	**Special features in the operation**
Rel. 1.2	BA00.1381.00 111 102	In the case of the ADR * variant, the following functions are possible only while the ignition is switched on: • insertion / withdrawing a tachograph card • printing / display of stored data
Rel. 1.2a	BA00.1381.00 120 102	When the ignition is switched on or off, the DTCO 1381 can switch automatically to a defined activity, for example "H".
 **Rel. 1.3**	BA00.1381.00 130 102	Current operating instructions.

A

■ Automatic setting of the activities after ignition on/off

Automatically set activity ...

		... after ignition on		... after ignition off	
	Break time / rest period	Driver -1		Break time / rest period	Driver -1
	Other working time			Other working time	
	Availability time			Availability time	
	No change			No change	
	Break time / rest period	Driver -2		Break time / rest period	Driver -2
	Other working time			Other working time	
	Availability time			Availability time	
	No change			No change	

☞ During the "Manual input" (addition of activities on the driver card) this option is disabled! There is no change of activity after ignition on/off!

The automatic setting after ignition on/off is only visible in the standard display.

➥ *For details on the standard setting, see "Setting activities" as of page 37.*

Important!

The vehicle manufacturer may have already programmed defined settings of the activity after ignition on/off!

Please mark the set functions in the table by "✓".

Information about the DTCO 1381

Type:

No:

Year:

Setting date:_____

Signature:_____

A

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■ Notes

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